July 2021

Binder 137 Monorchiidae C-K [Trematoda Taxon Notebooks]

Harold W. Manter Laboratory of Parasitology

CHRISOMON Manter & Pritchard, 1961

Diagnosis of Chrisomon: Monorchiinae. Body elongate; esophagus more than twice length of pharynx; testes single, elongate, near posterior end of body; cirrus and metraterm spined; ovary irregularly lobed; vitellaria of numerous follicles, not reaching acetabulum; uterus not extending posterior to testis; excretory vesicle apparently Y-shaped with very short stem. Type species: *C. tropicus* (Manter, 1940) n. comb. (syn. *Telolecithus tropicus*).

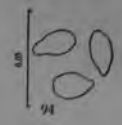
Yamaguti (1958) moved *T. tropicus* to the genus *"Pristisomum"* which he considered the equivalent of *Postmonorchis* Hopkins, 1941. As noted above, we do not accept the genus *Pristisomum*. *T. tropicus* has a number of differences from other species of *Postmonorchis* and should be placed in a separate genus to which we give the name *Chrisomon* (masculine, derived as an anagram from the word *Monorchis*).

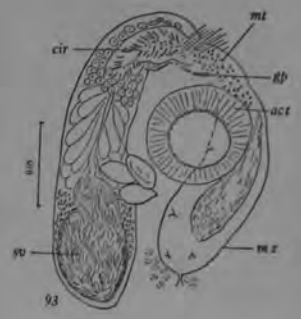
M. decapteri differs from all other species in the genus by its very long forebody and esophagus. In spite of the probable occurrence of two testes in *M. decapteri*, the species shows considerable similarity to *Telolecithus tropicus* Manter, 1940 from a related host from the west coast of Panama. In both species there is a long forebody and esophagus, elongate testis, irregularly shaped ovary, uterus not extending posterior to testis, spined metraterm and cirrus, and Y-shaped excretory vesicle.

Chrisomon tropicus (Manter, 1940) Monorchidae
Manter & Pritchard, 1961

Telolecithus tropicus, new species MANTER, 1940
(Plate 44, figs. 92-94)

Host: *Selar crumenophthalmus* (Bloch) = Trachurops crumenophthalma
Location: Intestine (Carangidae)
Locality: Bahia Honda, Panama
Number: 2 specimens in one of 2 hosts examined





SPECIFIC DIAGNOSIS OF TELOLECITHUS TROPICUS

Body flat, elongate, more or less tapering at each end, forebody thickly spined but spines soon disappear posterior to acetabulum. Type specimen 1.074 long, 0.217 wide. Suckers weakly muscular; oral sucker slightly wider than long, not funnel shaped, 0.060 in transverse diameter; acetabulum 0.060 to 0.065 in diameter or about equal to oral sucker; forebody 0.375 in length.

Very short prepharynx, fairly large pharynx, 0.058 long by 0.033 wide; very long, narrow esophagus, 0.175 in length or more than 3 times length of pharynx; ceca inconspicuous, extending almost but not quite to posterior end of body.

Genital pore a median, transverse slit immediately in front of acetabulum. Testis single, large, elongate, slightly irregular in outline, in posterior third of body, extending almost to posterior end of body. Cirrus sac (fig. 93) clavate, bowing around right side of acetabulum, size 0.177 (length) by 0.054 (greatest width, near base); containing a large ovoid seminal vesicle in its basal third, in its middle third a narrow tube surrounded by large transparent cells, in its distal third a spined cirrus; prostatic cells chiefly around base of cirrus; gland cells also present around seminal vesicle. Genital atrium short but spacious, unspined. Ovary elongated, very irregularly lobed, to the left partly covering left cecum, immediately anterior to testis; uterine seminal receptacle; uterus extending posteriorly to overlap testis or (in one specimen) even posterior to the testis, entering base of metraterm, without bulb; metraterm (fig. 93) clavate, almost as large as cirrus sac, bowing around left side of acetabulum, its basal portion largely vesicular with a few large spines (fig. 93) and with a central fibrous mass; anterior third of metraterm with short triangular spines; eggs tapering abruptly at one end, more rounded at the other, 24 to 26 by 12 to 15 μ. Vitellaria in the form of indefinite follicles usually more or less fused together, from about the anterior end of the ovary to the tips of the ceca, not quite reaching posterior end of the body and not reaching acetabulum by some distance, largely lateral, partly median, overlapping testis and uterus. Excretory vesicle very short, Y shaped.

The name *tropicus* is for the region of collection.

Comparisons. This trematode is placed in the genus Telolecithus chiefly because of the posterior location of the vitellaria. It bears some resemblance to Paraproctotrema Yamaguti, 1934 but differs in the location of the vitellaria, in lacking the uterine bulb, in shorter ceca, and in other details. It differs from *Telolecithus pugetensis* Lloyd and Guberlet, 1932 in body shape, length of esophagus, extent of vitellaria, shape of ovary and testis, in the terminal entrance of the uterus into the metraterm, in shape of eggs. It resembles *Genolopa trifolifer* Nicoll, 1915 in many respects, although the vitellaria extend more posteriorly, the gonads are of different shape, the prepharynx is shorter, and the esophagus is longer. It is probable that the genus Genolopa should be restricted to monorchids with a median cluster of much longer spines in the cirrus sac, a character of *G. ampullacea* Linton, the type species. Such a view, however, would remove most of the species now contained in the genus.

FROM: ALLAN HANCOCK PACIFIC EXPEDITIONS

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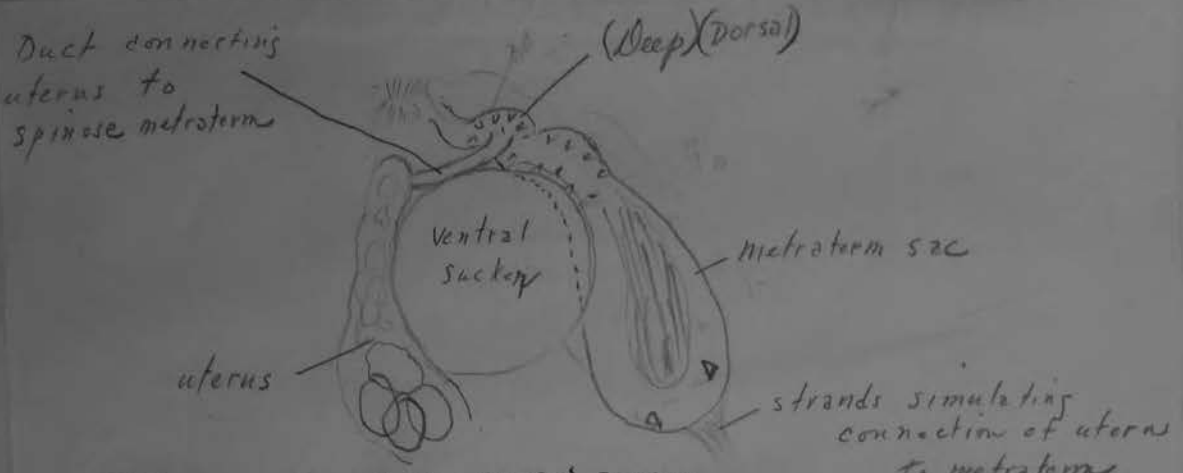

HOLOTYPE

from Cable (1963) letter

C. tropicum from
Selar crumenophthalmus
in Caribbean

from Cable (1963)

Chrisomom **decapteri** n.sp.
Nahhas & Cable 1964
Figures 36 and 37

Host: *Decapterus macarellus* (C).
Site: intestine.
Holotype: U.S.N.M. 60282.

Description based on 6 specimens. Body elongated, rounded at both ends, 0.900-1.50 long, 0.300-0.400 wide (one additional specimen without eggs measured 0.772 by 0.220). Cuticular spines numerous to posterior edge of ventral sucker, then become sparse and shortly disappear. Eye-spot pigment present. Oral sucker transversely elongated, 0.045-0.063 long, 0.060-0.090 wide; ventral sucker about 1/3 body length from anterior end, 0.084-0.090 long, 0.054-0.084 wide; sucker ratio 1:1-1.15. Prepharynx about half length of pharynx; pharynx 0.053-0.083 in diameter; esophagus 2-2.5 times length of pharynx; ceca long, extending to near posterior extremity. Testis elongated, almost half body length; cirrus sac to right of midline, 0.150-0.374 long, 0.050-0.064 wide, containing spherical seminal vesicle, tubular pars prostatica and cirrus with small spines 9-12 μ long. Ovary irregularly lobed, to left of and usually overlapping testis anteriorly. Metraterm sac almost as large as cirrus sac, consisting of posterior vesicle with a few scattered spines and anterior division with numerous spines similar to those of cirrus. Uterus extending posterior to testis, overlapping it ventrally and entering metraterm sac near its anterior spiny portion. Genital atrium small, without spines; its pore median, preacetabular. Vitellaria in lateral fields, extending from anterior edge of ovary or posterior margin of cirrus sac to tips of ceca; follicles elongated, tending to fuse. Eggs 20-24 by 12-17 μ, rounded at one end, tapering at other (Fig. 37). Excretory vesicle sac-shaped, very short; pore terminal.

This species is so similar to *C. tropicum* (Manter, 1940) that further collections of *C. tropicus* from the Pacific might prove the 2 to be identical. The main differences, which may be due to development in different host species, are the larger and more elongated testis, slightly more extensive vitellaria and a somewhat more anterior ovary in *C. decapteri*. Similarities concern such details as shape of the eggs, the presence of 3 or 4 large spines in the posterior portion of the metraterm sac, extent of spination and measurements. Manter (1940a) described a very short, Y-shaped excretory vesicle in *C. tropicum* whereas it was observed to be short but sac-shaped in living specimens of *C. decapteri;* Manter may have interpreted the expanded main excretory ducts as part of the vesicle. In living *C. decapteri,* the uterus was seen to join the metraterm sac at its anterior, more spinose portion whereas Manter described that junction as being at the posterior end of the sac. We studied the type specimen of *C. tropicus* and concluded that the uterus enters the metraterm sac as in *C. decapteri*. Dr. Manter reexamined the specimen and agreed with that interpretation. Thus the diagnosis of the genus must be emended as follows:

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37

Genus *Chrisomom* emended

Monorchiidae: Body elongated; esophagus more than twice length of pharynx; testis single, elongated, near posterior end of body; cirrus sac and metraterm sac spinose; ovary irregularly lobed; uterus extending posterior to testis or not, joining more spinose anterior portion of metraterm sac; vitelline follicles numerous, extending most of length of hindbody but not reaching acetabulum; excretory vesicle sac-shaped, short; parasites in intestine of marine fishes. Type species: *C. tropicus* (Manter, 1940) Manter & Pritchard, 1961 (Synonym: *Telolecithus tropicus* Manter); other species: *C. decapteri* n.sp.

A single specimen from *Selar crumenophthalmus* from Jamaica is in agreement with the measurements and general topography of both species of *Chrisomon* except that the testis, due to distortion and poor fixation, is more anterior, and the cirrus sac overlaps the metraterm covering it more or less completely. Its identification, therefore, remains undetermined.

Chrisomon sp.

Host: Decapterus punctatus
Site: Intestine
Locality: Santa Rosa Island , Pensacola Bay, Florida.

Two specimens were recovered, but one was lost during processing. The characteristic features of this monorchiid genus include the large single testis that occupies a large portion of the hindbody, the irregularly lobed ovary, long esophagus and extensive vitellaria, characteristics shown in our remaining immature specimen. Two species are known in the genus: *C. tropicus* (Manter, 1940) Manter and Pritchard, 1961, from *Selar crumenophthalmus* in the Panama Pacific and *C. decapteri* Nahhas and Cable, 1964, from *Decapterus macarellus* in Curaçao, West Indies. The morphology and general topography of organs of our single immature specimen, as well as the presence in a related host, suggest that it is *C. decapteri*.

From Nahhas and Powell, 1971

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4780 SI
Colored Tabs

23-281
4781 SI
Clear Tabs

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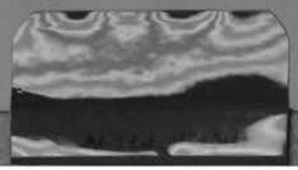

Diplohurleytrema Nahhas & Cable, 1964

Monorchiidae: subfamily Hurleytrematinae: Body spinose, elongated; eye-spot pigment absent. Acetabulum preequatorial; ceca short; esophagus long. Testes 2, diagonal; cirrus sac long, containing bipartite seminal vesicle and spiny cirrus. Ovary entire, pretesticular, in anterior half of body; seminal receptacle present; metraterm sac absent; uterus occupying most of hindbody. Vitelline follicles lateral, mostly in anterior half of body. Genital pore preacetabular. Eggs with single unipolar filaments. Excretory vesicle tubular. Parasitic in intestine of marine fishes. Type and only species:

Diplohurleytrema brevicaecum Nahhas & Cable, 1964

Figure 40

Host: Echidna catenata (C).
Site: intestine.
Holotype: U.S.N.M. 60284.

Description based on 25 specimens. Body elongated, rounded anteriorly, tapering posteriorly, 0.566-1.25 long, 0.213-0.407 wide. Entire cuticle spinose, with spines becoming smaller posteriorly; eye-spot pigment absent. Oral sucker 0.107-0.180 long, 0.135-0.200 wide; ventral sucker preequatorial, 0.083-0.146 long, 0.090-0.160 wide; sucker ratio 1:0.70-0.80. Prepharynx absent; pharynx 0.039-0.070 in diameter; esophagus thick-walled, 3-4 times length of pharynx, usually sinuous, surrounded by gland cells; ceca short, terminating in zone of anterior testis. Testes 2, entire, usually diagonal, rarely almost symmetrical or nearly tandem, 0.083-0.200 in diameter; anterior testis to right of midline, posterior testis slightly to left. Cirrus sac 0.233-0.467 long (1/3-1/2 body length), 0.045-0.080 wide; slightly to left of midline; containing bipartite seminal vesicle, very small and indistinct pars prostatica and long cirrus armed with minute spines, difficult to see in stained specimens but evident in living material. Ovary entire, to left of midline, anterior to testes; seminal receptacle large, posterodorsal to ovary, overlapping tip of left cecum; Mehlis' gland posteromedian to ovary; Laurer's canal opens dorsal to posterior end of cirrus sac; uterus strand-like in appearance, filling a large portion of the posttesticular space and terminating in muscular, thick-walled metraterm with finely stippled lining (spines ?). Genital atrium spacious; its pore median, immediately posterior to intestinal bifurcation. Eggs 30-37 long by 13-17 μ wide, exclusive of single unipolar filament 2-3 times length of egg. Vitellaria in lateral groups of 25-30 follicles each, extending from posterior level of pharynx to midlevel of anterior testis. Excretory vesicle tubular, extending to anterior testis; pore terminal.

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DIPLOHURLEYTREMA

Diplolasiotocus n. g. Yamaguti, 1952

Generic diagnosis.. Monorchiidae Odhner, 1911. Body small. Oral sucker terminal. Prepharynx present. Pharynx small. Esophagus long and slender. Ceca terminating some distance in front of posterior extremity. Acetabulum small, at about middle of body. Testes double, median, tandem, in posterior part of body. Cirrus pouch elongate, containing a bipartite vesicula seminalis, a distinct prostate complex and a densely spined cirrus. Genital pore pre-acetabular. Ovary pretesticular, submedian. Receptaculum seminis and Laurer's canal absent. Uterus running back and forth, encircling ovary and testes and occupying entire posttesticular region. Metraterm well differentiated, spined, functioning like terminal organ of *Lasiotocus* (= *Froctotrema*). Eggs light brown, thin-shelled, filamented at antiopercular pole. Vitellaria lateral, in ovarian zone, divided into few tubular lobes. Excretory vesicle tubular, with terminal pore. Parasites of marine fishes.

Genotype. *Diplolasiotocus chaetodontis*.

16. *Diplolasiotocus chaetodontis* n. g., n. sp. Yamaguti, 1952
Pl. III, Fig. 12.

Habitat. Intestine of *Chaetodon awuga*.

Material and locality. Two mature specimens fixed in acetic sublimate, stained and mounted in toto; the type was straightened out too strongly when fixed under a cover slip; Macassar.

Body slender, fragile, 0.7 – 2.9 mm long, 0.15 – 0.28 mm broad; greatest diameter at level of posterior testis in the larger type, but at ovario-vitellarian level in the paratype; forebody tapered to a blunt tip, nearly as long as hindbody; hindbody broader than forebody, bluntly pointed behind. Cuticle thin, unarmed, but may be spined if not macerated. Subcuticular musculature very poorly developed. Oral sucker terminal, cup-shaped, 60 – 66 × 70 – 78 μ, with very weak musculature. Prepharynx present. Pharynx oval, 36 × 30 μ. Esophagus very narrow, 0.11 – 0.75 mm long, bifurcating at posterior part of anterior third of body. Ceca also narrow, terminating at level of anterior testis. Acetabulum 0.06 – 0.13 mm in diameter, feebly developed, situated at about midbody.

Testes oval to elliptical, situated one behind the other at about middle of hindbody. In the type the anterior testis is oval and 120 μ long by 65 μ broad, while the posterior testis is elliptical and 300 μ long by 70 μ broad; in the paratype the anterior testis, 90 μ by 70 μ, entirely overlaps dorsally the posterior testis which is 150 μ long by 90 μ broad. The vasa efferentia, each of which arises from the anterior end of its own testis, run forward alongside each other dorsal to the uterus and unite together before opening into the seminal vesicle. There is a long claviform cirrus pouch which is 0.13 – 0.51 mm long by 30 – 86 μ broad and has a very delicate wall, and extends for

(over)

its greater part posterior to the acetabulum; vesicula seminalis occupying base of cirrus pouch, distinctly bipartite; in the type the smaller posterior portion is 44 μ long by 48 μ wide and the anterior 100 μ long by 62 μ wide. Pars prostatica distinctly differentiated, up to 30 μ long, with maximum width of 12 μ posteriorly, surrounded by well developed prostate cells, which fill up the available space within the cirrus pouch. A comparatively short ductus ejaculatorius follows the pars prostatica. Cirrus narrow proximally, somewhat widened distally (30 μ wide in the type), densely covered inside with acicular spines which are about 20 μ long except at the distal end where they are 12 μ long. Genital pore median, 0.11 mm in front of acetabulum in the type, but immediately anterior to it in the paratype.

Ovary globular to elliptical, 30–75 μ long by 30 μ broad, situated in front of anterior testis a little to left of median line at junction of middle with posterior third of body. Receptaculum seminis and Laurer's canal lacking. Shell gland dorsal to ovary. Vitelline gland divided into few tubular acini extending on each side from behind acetabulum to cecal end; in the paratype the gland of each side consists of four digitiform lobes, one of which is subdivided at the tip into one to three nodules. Transverse vitelline ducts uniting between ovary and anterior testis. The uterus is confined in the paratype to the vitellotesticular region, but in the type it shows a very characteristic course; at first it coils in the posttesticular region and then ascends along the right side of the testes as far as the ovary, where it turns backward and descends along the right side of the first ascending uterus to the posterior extremity. Thence it ascends again between this descending portion and the right margin of the body, and crossing the median line behind the cirrus pouch descends along the left side of the ovary and testes as far back as the posterior end of the body where it takes the final ascending course along the left margin of the body, and leads into the metraterm at the level of the pars prostatica. The metraterm, 0.4 mm long in the type, becomes dilated as it proceeds forwards along the left side of the body and attaining a maximum width of 70 μ turns toward the genital pore. It has a very thin delicate wall, and is covered rather sparsely with bristle-like spines of varying length. Eggs light brown, elongate oval, 36–51 μ long by 18–21 μ broad, with a very long filament (up to 1.2 mm) at antiopercular

pole; contained ovum not segmented. Excretory vesicle tubular, with terminal pore, reaching to posterior testis.

The present new genus differs from the most closely related *Lasiotocus*, in the testis being double and in the eggs being filamented. The first attributive of the compound name refers to the double testis.

Diplolasiotocus Yamaguti, 1952

Generic diagnosis. — Monorchiidae, Lasiotocinae: Body small, slender. Oral sucker terminal. Prepharynx present. Pharynx small. Esophagus long and slender. Ceca terminating some distance short of posterior extremity. Acetabulum small, situated toward midbody. Testes double, median, tandem, in posterior part of body. Cirrus pouch elongate, containing bipartite vesicula seminalis, distinct prostate complex and densely spined cirrus. Genital pore pre-acetabular. Ovary pre-testicular, submedian. Receptaculum seminis and Laurer's canal absent. Uterus running back and forth, encircling ovary and testes and occupying entire posttesticular region. Metraterm well differentiated, spined. Eggs thin-shelled, filamented at antiopercular pole. Vitellaria lateral, between cirrus pouch and anterior testis, divided into few tubular lobes. Excretory vesicle tubular, reaching to posterior testis. Intestinal parasites of marine fishes.

Genotype: *D. chaetodontis* Yamaguti, 1952 (Pl. 5, Fig. 58), in *Chaetodon awuga*; Macassar, Celebes.

Diplolasiotocus Yamaguti, 1952

Generic diagnosis. — Monorchiidae, Lasiotocinae: Body small, slender. Oral sucker terminal. Prepharynx present. Pharynx small. Esophagus long and slender. Ceca terminating some distance short of posterior extremity. Acetabulum small, situated toward midbody. Testes double, median, tandem, in posterior part of body. Cirrus pouch elongate, containing bipartite vesicula seminalis, distinct prostate complex and densely spined cirrus. Genital pore pre-acetabular. Ovary pre-testicular, submedian. Receptaculum seminis and Laurer's canal absent. Uterus running back and forth, encircling ovary and testes and occupying entire posttesticular region. Metraterm well differentiated, spined. Eggs thin-shelled, filamented at antiopercular pole. Vitellaria lateral, between cirrus pouch and anterior testis, divided into few tubular lobes. Excretory vesicle tubular, reaching to posterior testis. Intestinal parasites of marine fishes.

Genotype: *D. chaetodontis* Yamaguti, 1952 (Pl. 5, Fig. 58), in *Chaetodon auruga;* Macassar, Celebes.

DIPLOLASIOTOCUS

1.

J. P. 1959
Vol. 45

Diplomonorcheides magnacetabulum n. g., n. sp. (Figs. 8–10) Thomas, 1959

This species was always found in the intestine of the tongue sole, *Cynoglossus goreensis*, in association with *L. cynoglossi*. Only 1 specimen of *D. magnacetabulum* was obtained from the Accra locality compared with 5 from near Sekondi. All the specimens proved to be morphologically indistinguishable and are, therefore, considered together below.

Diagnosis: Body oval or ellipsoidal; tapering gradually at both ends; almost truncate posteriorly in contracted specimens; 0.91 to 2.34 long; 0.40 to 0.71 broad at widest point. Body surface spinulate; spines become progressively less dense posteriorly. Oral sucker sub-terminal, 0.065 by 0.08 to 0.16 by 0.20. Ventral sucker in anterior half of body, separated from oral sucker by a distance roughly equal to diameter of latter, almost spherical, 0.20 by 0.19 to 0.45 by 0.43. Ratio of oral to ventral sucker 1:2.3 to 1:2.9. Oral opening ventrally situated on oral sucker. Prepharynx short; pharynx spherical or elongate oval, 0.065 by 0.06 to 0.05 by 0.09. Gut-ceca postero-laterally directed, terminating in posterior third of distance between testis and posterior end. Excretory pore sub-terminal posteriorly. Excretory bladder tubular, dorsally situated in median line, apparently extending to level of transverse yolk duct before bifurcating. Genital pore mid-ventral, immediately in front of ventral sucker. Genital atrium thin-walled, elongated, extending to posterior level of ventral-sucker. Terminal male and female ducts lying at various levels along the atrium depending on degree of eversion of cirrus and degree of protrusion of female terminal organ. Testes paired, compact, symmetrically placed, intracecally behind ovary and cirrus pouch, roughly oval, 0.15 by 0.11 to 0.27 by 0.15. Cirrus sac large, muscular, arcuate, club-shaped, containing bipartite vesicula-seminalis, a short pars-prostatica, a long armed cirrus capable of eversion and prostatic cells. Ovary to right of cirrus pouch; oval or spherical; compact; 0.105 by 0.12 to 0.17 by 0.19. Oviduct short, arising from inner-dorsal surface of ovary; ootype median. Mehlis's gland well developed. Receptaculum seminis absent; Laurer's canal present. Uterus emerging ventrally from ootype; proximal region acts as receptaculum-seminis-uterinus and is frequently dilated with sperms; ascending and descending limbs fill most of available post-ovarian space. Uterus enters the anterior chamber of a specialized bipartite terminal organ. Posterior chamber of terminal organ spherical, containing sperms; anterior chamber spinulate, with a strong muscular sphincter surrounding its opening into genital atrium. Terminal organ surrounded by deeply staining sub-cuticular cells. Eggs oval; operculate; 0.022 by 0.012 to 0.025 by 0.015. Vitelline follicles numerous, lateral in position, extending from a short distance behind ventral sucker to a short distance behind testis, overlapping gut-ceca or testis; transverse yolk duct behind ovarian level; yolk reservoir occupying median position, giving rise to median yolk duct.

Host: Cynoglossus goreensis.
Habitat: Intestine.
Locality: Sub-littoral area at Accra and Sekondi.
Types: In Zoology Department, University College of Ghana.
No. of specimens: 6.

The genera of Monorchiidae in which the testes are double include *Monorcheides* Odhner, 1905, *Paramonorcheides* Yamaguti, 1938, *Diplomonorchis* Hopkins, 1941, *Physochoerus* Poche, 1926, *Diplolasiotocus* Yamaguti, 1952, *Triganodistomum* Simer, 1929, *Palaeorchis* Szidat, 1943 and *Achoerus* Wlasenko, 1931. The present genus resembles *Paramonorcheides* most closely but differs from it in that the testes are intra-cecal, the vitellaria more posterior and the genital atrium and the excretory bladder much longer.

Diplomonorcheides Thomas, 1959

Generic diagnosis: Monorchiidae Odhner, 1911. Body oval or ellipsoidal; spinulate. Oral sucker sub-terminal. Ventral suckers appreciably larger than oral sucker, pre-equatorial, close to oral sucker. Prepharynx short. Gut-ceca extending almost to posterior end of body. Excretory pore terminal posteriorly. Excretory bladder tubular, extending anteriorly to level of transverse yolk duct before bifurcating. Genital pore median; preacetabular. Genital atrium extending the length of ventral sucker. Testes symmetrical, intracecal, post-ovarian. Cirrus sac large, arcuate or S-shaped when fully extended, containing bipartite vesicula seminalis, pars prostatica and long armed, eversible cirrus. Ovary compact, to right of proximal end of cirrus. Ootype median. Receptaculum seminis absent but proximal region of uterus functions as receptaculum seminis uterinus. Laurer's canal present. Uterus extensive, entering anterior chamber of specialized bipartite terminal organ; anterior chamber spinulate with muscular sphincter at

This genus was reduced to synonymy to Diplomonorchis by Overstreet (1969)

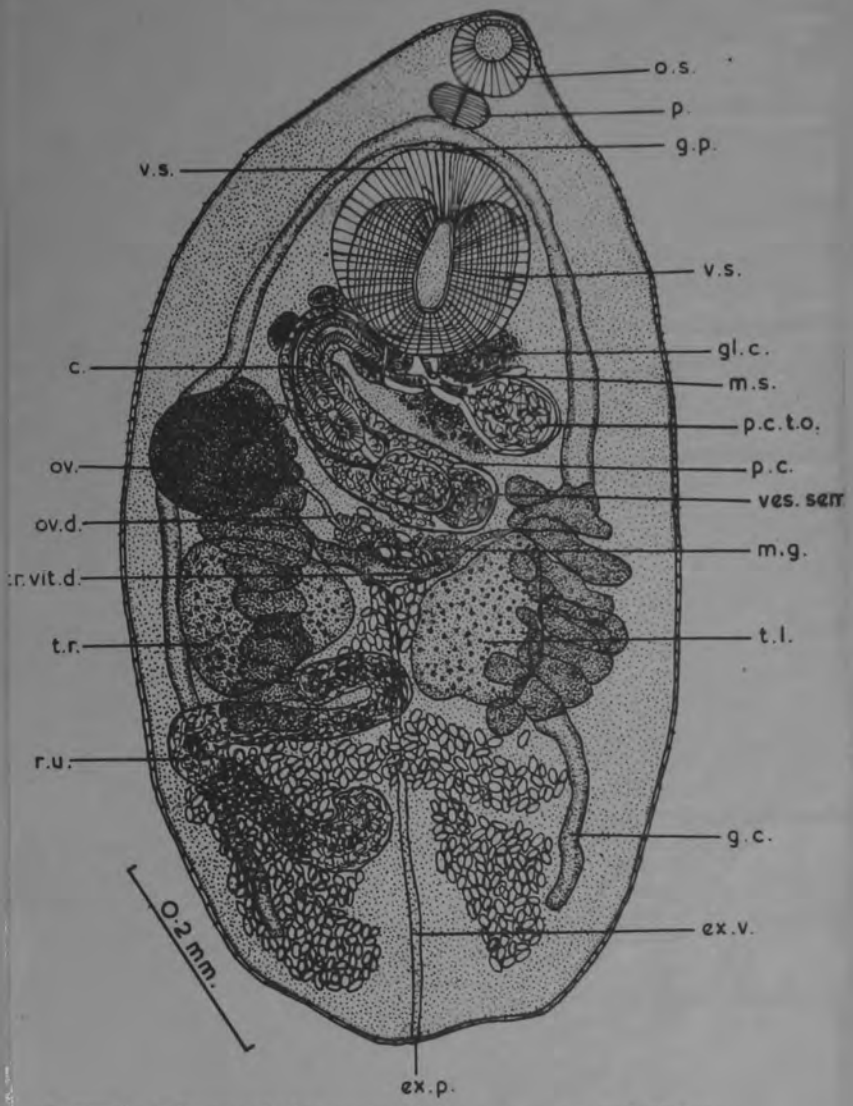
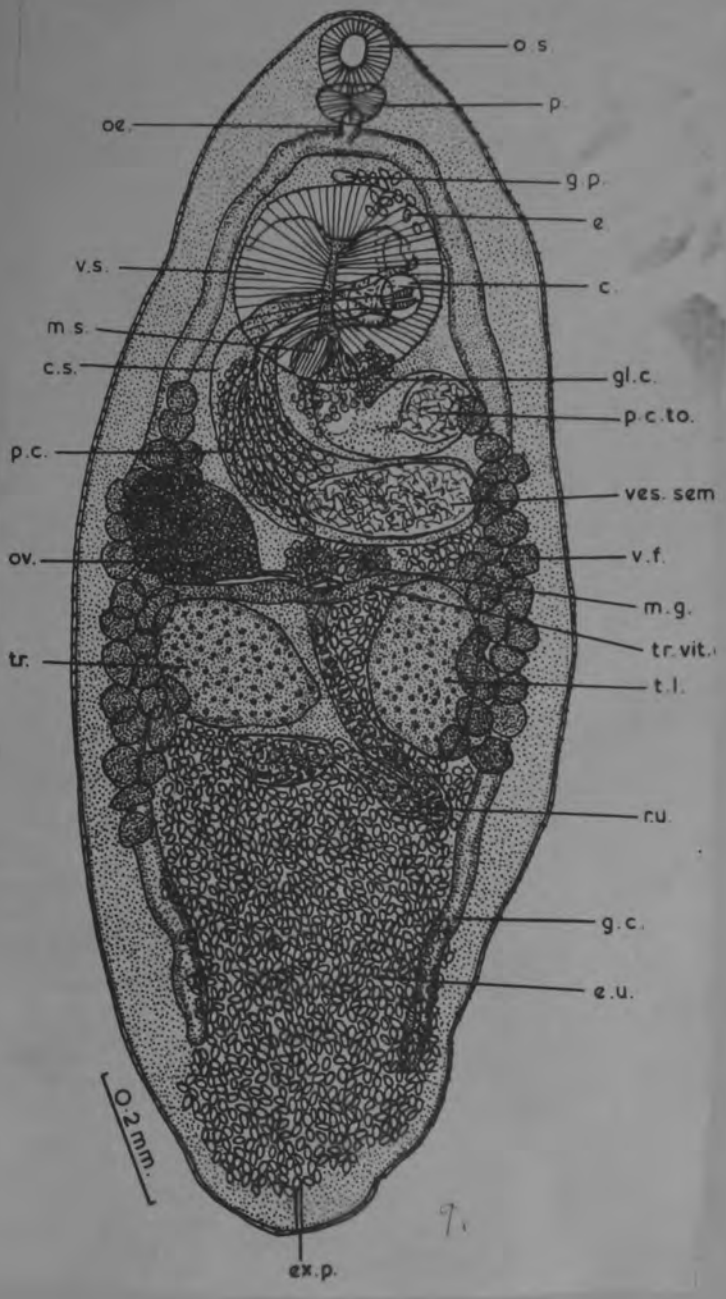


FIGURE 8. *Diplomonorcheides magnacetabulum* n. g., n. sp., ventral view.

1959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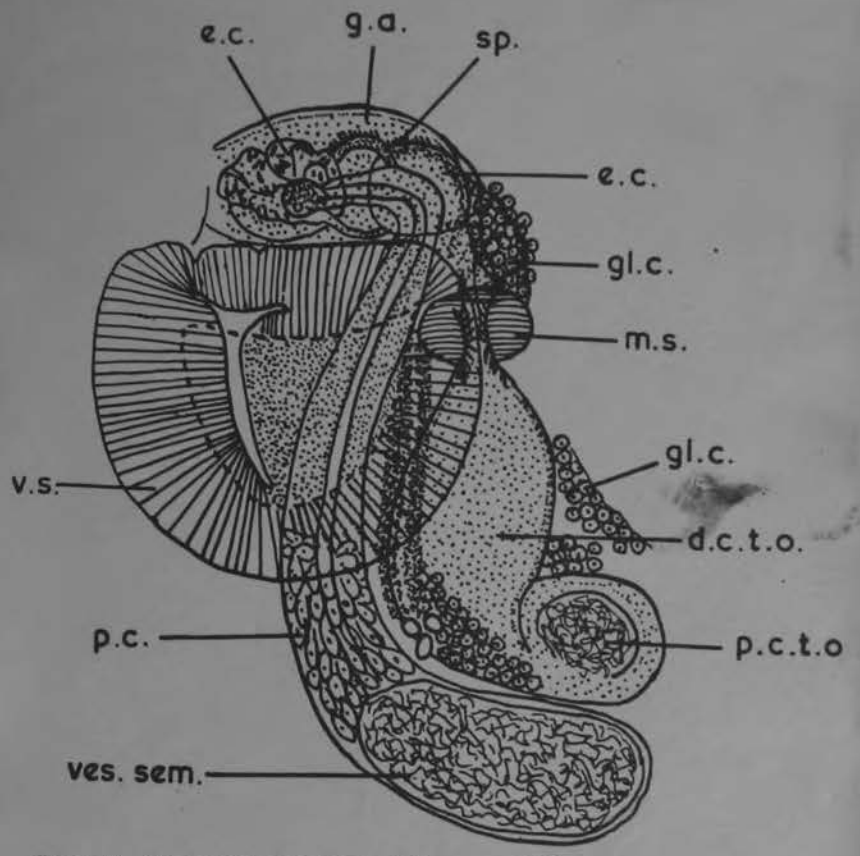


FIGURE 10. The terminal genital ducts of *D. magnacetabulum*.

Monorchiidae

from Fischthal & Thomas, 1969

Diplomonorcheides magnacetabulum Thomas, 1959

Diplomonorcheides magnacetabulum Thomas, 1959

Hosts : *Cynoglossus canariensis* Steindachner, *C. senegalensis* (Kaup), *C. goreensis* Steindachner, tongue soles (Cynoglossidae).

Locations : Small intestine, stomach.

Locality : Tema, Ghana.

Dates : 21 December 1964 (*C. canariensis*, *C. senegalensis*) ; 9 April 1965 (*C. goreensis*).

Specimens : USNM Helm. Coll. No. 63379 (from *C. canariensis*) ; No. 63380 (*C. senegalensis*) ; No. 63381-2 (*C. goreensis*).

Discussion : The present collection consists of 5 adults from the small intestine of 1 *C. canariensis* ; 2 adults from the small intestine of 1 *C. senegalensis* ; and 44 adults and 4 immature specimens from the stomach, and 74 adults and 2 immature specimens from the small intestine of 1 *C. goreensis*. The original description of this species is based on 6 adults from the latter host only from Accra and Sekondi, Ghana. The present specimens, without exception, have a boat shaped body formed by the ventral folding of the lateral body margins ; this produces a longitudinal, midventral groove extending from the level of the pharynx or anterior margin of the acetabulum almost to the posterior extremity. Examination of some of Thomas' (1959) original specimens indicates such a groove is present. In both the generic and specific diagnoses Thomas indicates that the seminal vesicle is bipartite, and this condition is illustrated in his Fig. 8. However, his Figs. 9 and 10 show the seminal vesicle as a simple sac. Our present material exhibits the latter condition only. A postoral circular muscle ring is present. Eyespot pigment granules are very rarely present.

DIPLOMONORCHEIDES

Diplomonorchis Hopkins, 1941

Generic diagnosis. — Monorchiidae, Telolecithinae: Body small, elongate oval to elliptical. Acetabulum small, pre-equatorial. Ceca terminating at or near posterior extremity. Testes symmetrical, extracecal, at about middle of hindbody. Cirrus pouch may or may not extend back of acetabulum. Genital pore postbifurcal. Ovary anteromedial to right testis, mostly medial to right cecum. Vitelline follicles extending longitudinally medial to testes or partly anterior and partly posterior to them. Uterus occupying most of hindbody, may intrude into pre-acetabular extracecal field, opening into terminal organ at or near its anterior end. Excretory vesicle tubular; flame cell formula as in *Monorcheides cumingiae*. Parasitic in intestine of marine fishes.

Genotype: *D. leiostomi* Hopkins, 1941 (Pl. 6, Figs. 63 & 64), in *Leiostomus xanthurus*, occasionally in *Orthopristis chrysopterus;* Beaufort, N.C.

Other species: *D. bivitellosus* (Manter, 1940) (syn. *Paramonorcheides b.* M.) in *Symphurus atramentatus;* Galapagos Island.

also emended diagnosis by Nahhas + Cable (1964) on page with *D. sphaeroaciniae*

DIPLOMONORCHIS Hopkins, 1941

Diagnosis by Hopkins, 1941.

Monorchiidae with undivided pouch-like excretory bladder; two testes, symmetrically or obliquely located on sides of body; ovary trilobate, on right side of median line, anterior to level of testes or between them; vitellaria at level of testes with some follicles extending anterior and posterior to testes; genital pore median ventral, between crural fork and ventral sucker; cirrus and distal part of metraterm armed with spines. Flame cell formula $2[(2+2)+(2+2)]$. Parasites in intestine of sea fishes. Type species, Diplomonorchis leiostomi Hopkins, 1941.

Other species:

DIPLOMONORCHIS Hopkins,1941

Monorchidae with undivided pouch-like excretory bladder; two testes, symmetrically or obliquely located on sides of body; ovary trilobate,on right side of median line, anterior to level of testes or between them; vitellaria at level of testes and along sides of body anterior and posterior to testes; genital pore median, ventral, between crural fork and ventral sucker; cirrus and distal part of metraterm armed with spines. Flame cell formula: $2\left[(2+2)+(2+2)\right]$. Parasites in intestine of sea fishes.

Type species: Diplomonorchis leiostomi Hopkins,1941

Other species: D. bivitellosus (Manter,1940) Hopkins,1941

DIPLOMONORCHIS Hopkins,1941

Monorchidae with undivided pouch-like excretory bladder; two testes, symmetrically or obliquely located on sides of body; ovary trilobate,on right side of median line, anterior to level of testes or between them; vitellaria at level of testes and along sides of body anterior and posterior to testes; genital pore median, ventral, between crural fork and ventral sucker; cirrus and distal part of metraterm armed with spines. Flame cell formula: $2\left[(2+2)+(2+2)\right]$. Parasites in intestine of sea fishes.

Type species: Diplomonorchis leiostomi Hopkins,1941

Other species: D. bivitellosus (Manter,1940) Hopkins,1941

Diplomonorchis n. g. Hopkins, 1941

Monorchiidae with undivided pouch-like excretory bladder; two testes, symmetrically or obliquely located on sides of body; ovary trilobate, on right side of median line, anterior to level of testes or between them; vitellaria at level of testes with some follicles extending anterior and posterior to testes; uterus coiling between testes and along sides of body anterior and posterior to testes; genital pore median ventral, between crural fork and ventral sucker; cirrus and distal part of metraterm armed with spines. Flame cell formula 2[(2+2)+(2+2)]. Parasites in intestine of sea fishes.

Type species, *Diplomonorchis leiostomi* n. sp.

Diplomonorchis leiostomi n. sp. Hopkins, 1941

(Figs. 1, 2, 3a)

With characters of the genus. Length 0.40 to 0.80 mm, average about 0.60 mm. Width 0.25 to 0.45 mm, average about 0.35 mm. Oral sucker spherical, 0.06 to 0.09 mm in diameter, average dimensions about 0.08 by 0.08 mm. Ventral sucker in middle third of body, much smaller than oral sucker, 0.04 to 0.06 mm by 0.04 to 0.06 mm. (Average 0.05 by 0.045.) Pharynx nearly spherical, about 0.04 by 0.04 mm. Esophagus usually shorter than pharynx. Intestinal crura reaching far behind testes, nearly to posterior end of body. Excretory bladder pouch-shaped, tapering to a very narrow anterior end reaching to level of ovary. Collecting tubes joining anterior end of bladder on each side, dividing at level of ventral sucker; flame cell formula 2[(2+2)+(2+2)]. Testes two, symmetrical or somewhat oblique, on

1

sides of body lateral to intestinal crura; level of testes about half-way between ventral sucker and posterior end. Ovary ventral and median to right intestinal cecum, partly anterior to level of testes and partly between them, divided into three distinct lobes. Vitellaria at level of testes and extending anterior and posterior to testes, dorsal to intestinal crura, consisting of a group of eight to ten follicles on each side. Uterus coiling along sides of body anterior and posterior to testes, and also filling most of intercrural space behind level of ventral sucker. Eggs thick-shelled, yellow-brown, 28 to 30 μ long and 17 to 20 μ wide in living specimens and 22 to 27 μ by 14 to 18 μ in whole mounts (See Fig. 3a). Genital pore median, just behind level of crural fork. Cirrus pouch one-fourth to one-third length of body, enclosing short nearly spherical seminal vesicle, narrow tubular pars prostatica, numerous large prostate glands, and eversible cirrus, about one-third length of cirrus pouch, armed with many short spines shaped like rose thorns about 6 μ long and 6 μ wide. Metraterm pouch nearly as long as cirrus pouch, containing a sac-like proximal part and a distal part armed with spines which are like the cirrus spines in size and shape (See Figs. 9b, 9f).

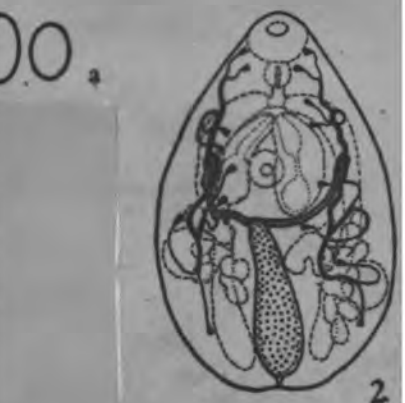
Host: Spot, *Leiostomus xanthurus* Lacépède, and also occasionally in pigfish, *Orthopristis chrysopterus* (Linnaeus).

Location: Small intestine.

Locality: Beaufort, N. C.

Type specimen: U. S. Nat. Mus. Helm. Coll. No. 36777.

This species is represented by 136 specimens collected during the summer of 1939; it was found in 10 of the 19 spot and in 2 of the 6 pigfish examined. *Diplomonorchis* differs from *Monorcheides* (Odhner, 1905) principally in the shape of the excretory bladder (undivided instead of Y-shaped) and also in the position of the vitellaria (in the posterior half of the body instead of anterior to the ventral sucker). The only other genera of the MONORCHIIDAE with two testes are *Physochoerus* Poche, 1925, and *Paramonorcheides* Yamaguti, 1938, which like *Monorcheides* have vitellaria anterior to the ventral sucker. Manter (1940) describes the new species *Paramonorcheides bivitellosus,* remarking that "the long ceca and the posterior group of vitelline follicles of the present species might almost be of generic value." Manter's species must be transferred to *Diplomonorchis;* its name therefore becomes *Diplomonorchis bivitellosus* (Manter, 1940). *D. leiostomi* differs from *D. bivitellosus* by the smaller size of the ventral sucker (its diameter being little more than half that of the oral sucker, while in Manter's species the suckers are nearly equal), the more rounded forms of the testes, and the much larger eggs (22 to 27 μ long, compared with 19 to 20 μ in *D. bivitellosus*).



2

Diplomonorchis leiostomi Hopkins, 1941

Gulf of Mexico

From: Nahhas & Powell 1965

(over)

Diplomonorchis leiostomi Hopkins, 1941

Diplomonorchis micropogoni Nahhas and Cable, 1964 (new synonym).

Hosts: *Archosargus rhomboidalis* (3 of 5); *Lagodon rhomboides* (2 of 5); *Orthopristis chrysopterus* (3 of 4).

Site: Pyloric caeca and intestine.

Discussion: Considerable variation exists in this species. The testes and vitellaria may be from equatorial in position to within the posterior half of the body. The uterus may have loops at the bifurcal level on one or both sides, the caeca may or may not extend beyond the testes, the posterior portion of the terminal organ may have a few spines or none, and the seminal vesicle may be spherical, oval, or tear-shaped. In most of my specimens, the testes are located toward the posterior end of the worm, and anterior loops of the uterus occur on both sides of the body. Nahhas and Cable (1964:206-207) distinguished *Diplomonorchis micropogoni* from *D. leiostomi* by short caeca terminating near the posterior margin of the testes and by the extent of the uterus. Since my specimens show intergradation between the two species and the two are from the same or related hosts (also see Corkum, 1966:46-47; Nahhas and Powell, 1965:17; and Sogandares-Bernal and Hutton, 1959b:62), I am reducing *D. micropogoni* Nahhas and Cable, 1964, to synonymy with *D. leiostomi*.

From: Overstreet, 1969

Diplomonorchis leiostomi Hopkins, 1941

Host: *Trinectes maculatus*.

Location: Small intestine.

Barataria Bay, La.

Hopkins (1941) first reported this species from the spot, *Leiostomus xanthurus Lacépède*, and the pigfish, *Orthopristis chrysopterus* (Linnaeus), of Beaufort, North Carolina. Sparks (1958) found *D. leiostomi* in both the pigfish and the black drum, *Pogonias cromis* (Linnaeus), taken in the vicinity of Grand Isle, Louisiana. Sogandares and Hutton (1959) added the silver perch, *Bairdiella chrysura* (Lacépède), and the pinfish, *Lagodon rhomboides* (Linnaeus), to the host list in Florida. The discovery of this parasite in the hogchoker is, therefore, a new host record for the species. It was in 28 of the 84 hogchokers examined, and as many as 38 mature and immature specimens were collected from one host. Ten specimens of a related fish, *Achirus lineatus*, were studied but none was noted to harbor *D. leiostomi*.

In comparing the material from *T. maculatus* with the original description by Hopkins, it is clear that the specimens in this study are consistently smaller in every respect (see Table 1). Morphologically, however, there is little doubt but what the forms from Louisiana and North Carolina are conspecific. For this reason, it is necessary to extend the original size ranges given by Hopkins to include those for the smaller members of the species.

From Corkum, 1966

TABLE 1. Size ranges of *Diplomonorchis leiostomi* from Louisiana (present study) and North Carolina (Hopkins, 1941).

	Present Study		Hopkins (1941)	
	Averages	Extremes	Averages	Extremes
Length	0.279 mm	0.26 to 0.30 mm	0.6 mm	0.4 to 0.8 mm
Width	0.158 mm	0.14 to 0.18 mm	0.35 mm	0.25 to 0.45 mm
Oral Sucker	0.042 mm	0.038 to 0.053 mm		
		x 0.037 to 0.056 mm	0.08 mm	0.06 to 0.09 mm
Ventral Sucker	0.033 mm	0.027 to 0.039 mm	0.05 by	0.04 to 0.06 mm
			0.0.45 mm	x 0.04 to 0.06 mm
Pharynx	0.023 mm	0.018 to 0.025 mm	0.04 by	
			0.04 mm	
Eggs	0.021 by	x 0.020 to 0.025 mm		0.022 to 0.027 mm
	0.013 mm	x 0.012 to 0.014 mm		x 0.014 to 0.018 mm

From Corkum, 1966

Diplomonorchis leiostomi Hopkins, 1941

Synonym: Diplomonorchis micropogoni Nahhas and Cable, 1964

Hosts: **Chasmodes saburrae*, **Gobiosoma robustum*, *Leiostomus xanthurus*, *Micropogon undulatus* and *Monacanthus hispidus*

Site: Ceca and Intestine

Localities: Pensacola Bay; Santa Rosa Sound Florida

The differences in size and shell thickness of eggs of worms taken from the various hosts are striking. The eggs are thick-shelled in specimens obtained from *Monacanthus hispidus* and *Chasmodes saburrae* but thin-walled in those from other hosts. Egg measurements are as follows: from *Chasmodes saburrae* (30–33 × 17–27 μ); *Gobiosoma robustum* (28–32 × 18–22 μ); *Leiostomus xanthurus* (20–30 × 14–20 μ); *Micropogon undulatus* (22–25 × 14–16 μ); *Monacanthus hispidus* (28–38 × 17–24 μ). Since these measurements overlap, and in the absence of other differences, it was decided to consider them all *D. leiostomi.*

Nahhas and Cable (1964) described four new species of *Diplomonorchis*, including *D. micropogoni*, from *Micropogon furnieri* and *Archosargus unimaculatus.* This species was distinguished from *D. leiostomi* by shorter ceca and extent of the uterus, features that vary with body contraction and degree of congestion of uterus, as evidenced in the present material. Overstreet (1969) observed similar variations and considered *D. micropogoni* Nahhas and Cable, 1964 a synonym.

From Nahhas and Powell, 1971

Diplomonorchis **micropogoni** n.sp.
Figure 43 Nahhas & Cable, 1964

Hosts: *Micropogon furnieri* (J); *Archosargus unimaculatus* (J).

Site: intestine.

Holotype: U.S.N.M. 60286.

Description based on 17 specimens. Body oval to pyriform, 0.233-0.620 long, 0.186-0.420 wide. Entire cuticle spinose; eye-spot pigment present. Oral sucker 0.046-0.083 long, 0.066-0.098 wide; ventral sucker in middle third of body, 0.037-0.067 in diameter; sucker ratio 1:0.61-0.84. Prepharynx absent; pharynx 0.022-0.037 long, 0.027-0.053 wide; ceca terminating near posterior margin of testes. Testes 2, symmetrical, extracecal, immediately postequatorial, 0.054-0.166 long, 0.038-0.080 wide; cirrus sac 0.090-0.180 long, 0.045-0.090 wide, to right of midline, extending short distance posterior to ventral sucker; containing spherical seminal vesicle, short tubular pars prostatica and cirrus with spines. Metraterm sac 0.083-0.105 long, 0.035-0.042 wide, with large, unarmed posterior vesicle and anterior portion with a few spines 6-8 μ long, similar to those of cirrus. Ovary 4-lobed, 0.060-0.165 long, 0.053-0.068 wide, partly anterior to, and partly overlapping level of right testis; uterus voluminous, occupying almost all available space posterior to intestinal bifurcation; entering metraterm sac near anterior spinose end. Vitelline follicles relatively large, in 2 lateral groups, coinciding with or slightly exceeding zone occupied by gonads. Eggs numerous, thick-shelled, 22-30 by 14-18 μ, usually 24-27 by 15-17. Excretory vesicle tubular; pore terminal.

Worms from some hosts could be separated into 2 size groups but otherwise were identical. The presence of such groups may be expected occasionally because monorchiid cercaria may emerge from, and reenter the same clam to encyst in large numbers. Thus various age groups of adult worms would result from the host's feeding on infected clams at different times.

This species is distinguished from *D. leiostomi* and *D. bivitellosus* by its short ceca and the extent of the uterus. It further differs from *D. bivitellosus* in the distribution of the vitellaria, sucker ratio and egg size, and from *myrophitis* in body shape and size, extracecal position of testes, more extensive uterus and in having fewer spines in the metraterm.

Synonym of D. leiostomi Hopkins, 1941
acc. Overstreet, 1969

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DIPLOMONORCHIS bivitellosus (Manter, 1940) Hopkins, 1941 Monorchidae

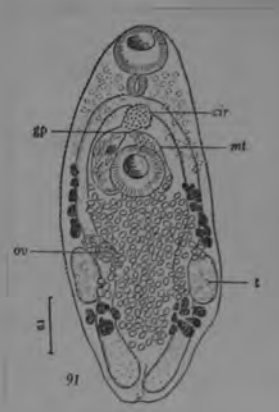
Syn. **Paramonorcheides bivitellosus, ~~new species~~** MANTER, 1940
(Plate 44, fig. 91)

Host: *Symphurus atramentatus* Jordan and Bollman
Location: Intestine
Locality: James Island, Galapagos
Number: One specimen

The genus Paramonorcheides Yamaguti, 1938 apparently differs from Monorcheides Odhner, 1905 chiefly in its lobed ovary. The long ceca and the posterior group of vitelline follicles of the present species might almost be of generic value, but the species is included in Yamaguti's genus.

SPECIFIC DIAGNOSIS OF PARAMONORCHEIDES BIVITELLOSUS

Length 0.675; greatest width (just posterior to midbody) 0.280; both ends tapering slightly and rounded; body spined except posterior to testes. Oral sucker 0.102 in diameter; acetabulum 0.095 in diameter; ratio almost equal, oral sucker slightly larger. Forebody 0.220 or about ⅓ body length, rich in gland cells. Prepharynx very short or lacking; pharynx 0.049 long by 0.042 wide; esophagus very short or lacking; intestinal bifurcation about midway between suckers or slightly nearer oral sucker; ceca extending to near posterior end of body, curving inward opposite testes. Genital pore midway between acetabulum and intestinal bifurcation, submedian or slightly to the right (cirrus protruded). Testes 2, about twice longer than wide, at level of beginning of posterior third of body, symmetrical, far apart, near sides of body, largely or wholly extracecal. Cirrus sac (with cirrus protruded) claviform, from pore to posterior edge of acetabulum, largely to right of acetabulum, with ovoid seminal vesicle, 2 types of spines; cirrus with thorn-shaped spines. Ovary lobed, to the right, close to right testis to which it is partly median, partly anterior, ventral to right cecum; seminal receptacle not seen; metraterm claviform, spiny, from genital pore to posterior edge of acetabulum, lying to left of cirrus sac, largely dorsal to acetabulum, about same length as cirrus sac; vitelline follicles arranged in two lateral groups on each side divided by testes; anterior group from mid-acetabular level to testes, chiefly lateral to ceca; posterior group of few follicles extending a short distance posterior to testes, largely ventral to ceca. Eggs thick shelled, sometimes almost spherical, 19 to 20 by 15 to 16 μ. Uterus filling most of middle of body but not reaching posterior end by a short distance. Extent of excretory vesicle not determined.



The name *bivitellosus* refers to the double grouping of vitellaria on each side of the body.

Discussion. This species is placed in the genus Paramonorcheides because of the 2 testes and the lobed ovary. It differs from both *P. awatati* Yamaguti, 1938 and *P. siremboni* Yamaguti, 1938 in several respects, notably: the posterior group of vitellaria, the anterior group of vitellaria not reaching anterior to the acetabulum, the longer ceca, shorter esophagus, and wider eggs. The testes are more posterior and less elongate.

FROM: ALLAN HANCOCK PACIFIC EXPEDITIONS, VOL. 2, NO. 14

Monorchidae

Diplomonorchis floridensis Nahhas & Powell,1965

Diplomonorchis floridensis sp. n.
(Fig. 1)

Symphurus plagusa (L.): Jam. Cromwell in two of three.

Infection:

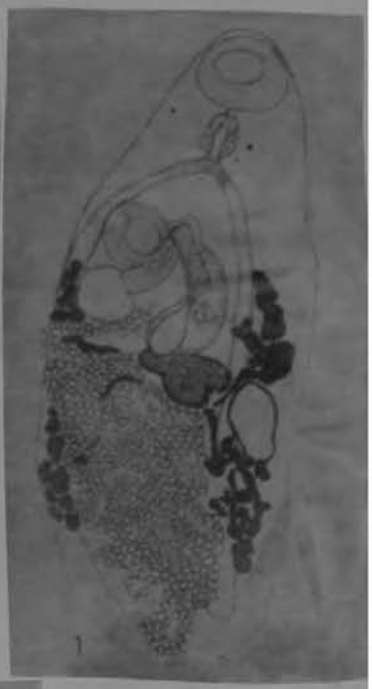
Type: USNM Helm. Coll. No. 60093.

Description based on 11 specimens, measurements on 8 adults:

Elongated, rounded at both ends, 0.686 to 1.0 mm long, 0.301 to 0.360 mm wide. Cuticular spines extending to level of testes. Cephalic cyc-pots present. Oral sucker 96 to 120 diameter; ventral sucker preequatorial, to third, 83 to 128 in diameter; sucker ratio 1:0.86. Prepharynx short, pharynx 53 to long, 38 to 60 wide, with several rows of spines on anterior margin; esophagus short, bifurcation midway between suckers; intestinal ceca not studied in live material and whole mounts about 7 long, present in lumen of ceca. Excretory junction vesicle extending to near posterior end of body. Testes two, mainly extracecal, tandem, equally near middle of body, longer than wide; cirrus sac elevated, extending from anterior to posterior testis, and containing coiled seminal vesicle, short pars prostatica and cirrus with triangular spines 8 to 9 long. Ovary lobed, anterior to right testis. Terminal organ well developed, with unarmed posterior vesicle and anterior spiny part; metraterm spines triangular, about same size as those of cirrus; uterus extending posteriorly to near end of body; vaginal terminal organ at junction of spinous part and vesicle. Vitelline follicles in two lateral groups extending anterior and posterior to testes. Eggs thick-shelled, 18 to 23 by 12 to 15. Excretory vesicle tubular, extending to anterior margin of ovary; pore terminal.

Discussion: This species is most similar to *D. bicitellosus* (Manter, 1940) Hopkins, 1941 from *Symphurus atramaculatus* Jordan and Bollman from James Island, Galapagos. The chief differences are the greater posterior extent of the cirrus sac, and presence of spines in the anterior portion of the pharynx and ceca in *D. floridensis*. Pearse (1949) reported *D. bicitellosus* from *S. plagusa* (Linnaeus) from Beaufort, North Carolina. His drawing shows a cirrus sac extending posterior to the ventral sucker, but no spines are reported in the pharynx and ceca. We have been unable to obtain his specimens for further comparison. Ingalton's (1905, figures 161–164) *Distomum* sp., also from the same host and locality, is undoubtedly the same species found by Pearse.

The genera *Hurleytrema* Srivastava, 1939, *Hurleytrematoides* Yamaguti, 1954, and *Pseudohurleytrema* Yamaguti, 1954 are closely related. To date, eight species have been allocated to this group with different authors utilizing various characters in assigning their species. In our opinion, the length of the ceca and distribution of the vitellaria have been overemphasized and the terminal reproductive organs ignored. The seminal vesicle may be single (*Hurleytrema* and *Pseudohurleytrema*) or bipartite (*Hurleytrematoides*). In the female part, the uterus enters a structure peculiar to many monorchiids that has been variously called metraterm pouch, metraterm sac or terminal organ. Of these names the last is preferred. The terminal organ may be a simple thick- or double-walled structure that is a continuation of the uterus proper (Figs. 2, 3), or a bipartite structure consisting of a posterior vesicle, usually unarmed, and an anterior spiny part (Figs. 1, 5). This latter type characterizes a number of monorchiid genera like *Pseudomonorchis* Hopkins, 1941, *Diplomonorchis* Hopkins, 1941, and *Choricotyle* Manter and Pritchard, 1961. Several species are known in these genera, and in all of them the uterus joins the bipartite terminal organ near the junction of the vesicle with the spines anterior part. This was shown by Nahhas and Cable (1964) to be the case in *Choricotyle*



trapicus (Manter, 1940) which was described otherwise by Manter (1940). In our opinion this difference in the two types of the terminal organ is of generic value. The description of this terminal organ in some of the lepidotrematine species is inadequate, but more is given, supplemented with the drawings,

mit allocation of species into four genera, three of which are already available: *Hurleytrema* (Fig. 2, seminal vesicle unipartite, terminal organ simple) includes *H. orocautum* Srivastava, 1939 and *H. longitestis* Bravo-Hollis, 1956; *Hurleytrematoides* (Fig. 3, seminal vesicle bipartite, terminal organ simple) includes *H. chaetodoni* (Manter, 1942) and *H. curacaensis* Nahhas and Cable, 1964; *Pseudohurleytrema* (Fig. 4, seminal vesicle bipartite, terminal organ bipartite) includes *P. lucinostomi* (Manter, 1942) and *P. malaccensis* (Velasquez, 1961) n. comb., and a new species named below. To accommodate species with a bipartite seminal vesicle and terminal organ (Fig. 5) a new genus, *Parahurleytrema*, is proposed and diagnosed as follows:

-over-

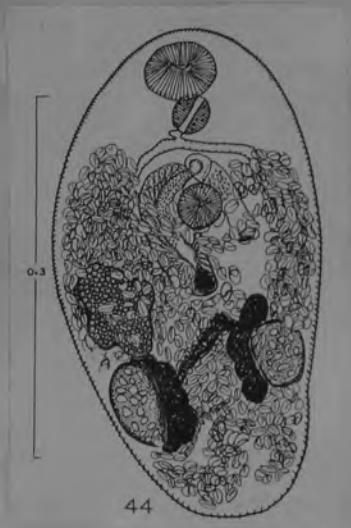
Diplomonorchis floridensis Nahhas and Powell, 1965

Host: *Symphurus plagiusa*
Site: Intestine
Locality: Pensacola Bay, Florida

The presence of spines in the anterior portion of the pharynx and ceca distinguishes this species from others in the genus. Two specimens, one mature, the other immature, show these spines.

From Nahhas and Powell, 1971

Diplomonorchis **hopkinsi** n.sp.
Figure 44 Nahhas & Cable, 1964
Host: Micropogon furnieri (Desmarest).
Site: intestine.
Holotype: U.S.N.M. 60287.



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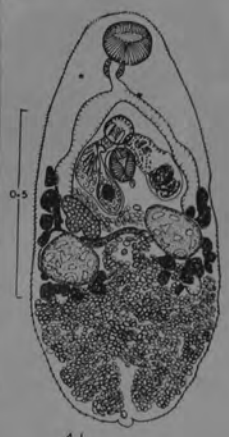
Description based on 16 specimens. Body oval, 0.247-0.380 long, 0.180-0.233 wide. Entire cuticle spinose; eye-spot pigment absent. Oral sucker 0.040-0.053 long, 0.052-0.070 wide; ventral sucker just within middle third of body length, 0.033-0.039 in diameter; sucker ratio 1:0.65-0.80. Prepharynx absent; pharynx 0.025-0.035 in diameter; esophagus short; ceca extending just posterior to testes. Gonads mainly postequatorial. Testes 2, entire, 0.037-0.068 in diameter, symmetrical to somewhat oblique, mainly extracecal; cirrus sac to right of midline, 0.084-0.130 long, 0.038-0.045 wide, extending at least to midlevel of ovary, containing spherical seminal vesicle, pars prostatica and relatively long spiny cirrus. Metraterm sac indistinct; its spines and those of cirrus minute, difficult to see. Ovary indistinctly 4-lobed. Immediately anterior to right testis which it may overlap; uterus voluminous, filling most available space posterior to intestinal bifurcation, entering metraterm sac near its spinose anterior region. Genital atrium wide, unarmed; genital pore median, approximately midway between acetabulum and intestinal bifurcation. Vitellaria 4-6 follicles on each side, mainly dorsomedian to testes, rarely extending anteriorly to midlevel of ovary. Eggs small, thin-shelled, 13-15 by 9-11 μ. Excretory vesicle tubular; its pore terminal.

This species is named in honor of Prof. S. H. Hopkins. Because it and *D. micropogoni* were found together in the same host individual, they were not immediately recognized as being distinct species. Later we found that *D. hopkinsi* lacked eye-spot pigment, had an indistinct metraterm sac, and contained much smaller eggs. Hopkins did not mention eye-spot pigment in describing *D. leiostomi* but our examination of the type revealed its presence. Cercaria of the Monorchiidae, unlike most other families, may or may not have eye-spots whose pigment can be readily found in the adults. Even so, it is unexpected to find in the same genus, species with or without such pigment, but there may be other such instances as many descriptions are not explicit in that matter.

Diplomonorchis **myrophitis** n.sp.
Nahhas & Cable, 1964
Figures 41 and 42

Host: Myrophis punctatus (J).
Site: intestine.
Holotype: U.S.N.M. 60285.

Description based on 3 specimens. Body oval, 0.887-1.062 long, 0.347-0.513 wide. Cuticle with spines close together anteriorly becoming sparse posteriorly. Eye-spot pigment present. Oral sucker 0.097-0.108 long, 0.105-0.113 wide; ventral sucker in middle third of body length, 0.072-0.075 long, 0.054-0.072 wide; sucker ratio 1:0.63-0.70. Prepharynx absent; pharynx 0.045-0.053 in diameter; esophagus about as long as pharynx; ceca extending short distance posterior to testes. Gonads in middle third of body. Testes 2, 0.113-0.140 long, 0.108-0.167 wide, entire, symmetrical, lateral portions extracecal. Cirrus sac to right of acetabulum, 0.200-0.253 long, 0.090-0.100 wide, extending posteriorly to mid- or posterior level of ovary, enclosing seminal vesicle, small inconspicuous pars prostatica, and spiny cirrus. Metraterm sac 0.167-0.213 long, 0.067-0.090 wide, posterior 3/5 non-spiny, anterior part spinose; spines of metraterm and cirrus wedge-shaped 15-17 μ long. Ovary



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distinctly trilobed, to right of midline, 0.113-0.133 long, 0.063-0.098 wide; seminal receptacle absent; Mehlis' gland posteromedian to cirrus sac; uterus voluminous, mainly posttesticular, entering median side of spinose anterior portion of metraterm sac. Genital atrium unarmed, but appears to be spinose when occupied by partly everted cirrus; genital pore midway between acetabulum and intestinal bifurcation. Eggs numerous, 20-24 by 15-17 μ. Vitellaria in lateral groups of 10-12 follicles, extending from about midacetabular level to ends of ceca. Excretory vesicle tubular; pore terminal.

In both *Diplomonorchis leiostomi* Hopkins, 1941, and *D. bivitellosus* (Manter, 1940) the testes are extracecal and the ceca extend almost to the posterior end of the body whereas in *D. myrophitis* the ceca are overlapped by the testes and terminate a short distance posterior to them. Other differences are the more anterior position of the testes and distribution of the vitellaria in *D. myrophitis*.

Diplomonorchis **sphaerovarium** n.sp.
Figures 45 and 46 Nahhas R Cabla, 1964
Host: Spheroides testudineus (J).
Site: intestine.
Holotype: U.S.N.M. 60288.

Description based on 15 specimens. Body oval to elongated, rounded at both ends, 0.984-1.41 long, 0.386-0.579 wide. Entire cuticle spinose, with spines becoming sparse posteriorly; eye-spot pigment present. Large glands in forebody, characteristic of many monorchiids, especially prominent. Oral sucker 0.105-0.120 long, 0.135-0.153 wide; ventral sucker about one-third body length from anterior end, 0.080-0.108 long, 0.099-0.120 wide; sucker ratio 1:0.7-0.82. Prepharynx absent; pharynx 0.054-0.067 in diameter; esophagus shorter than pharynx; ceca relatively long, extending to about middle of posttesticular space. Gonads equatorial. Testes 2, entire, symmetrical, 0.100-0.150 long, 0.068-0.105 wide; cirrus sac elongated, on right, 0.200-0.330 long, 0.066-0.090 wide, extending to ovarian zone, containing large, spherical seminal vesicle, small pars prostatica and cirrus with spines 8-10 μ long. Metraterm sac 0.133-0.226 long, 0.070-0.120 wide, with unarmed posterior vesicle and anterior region with spines similar to those of cirrus. Ovary smooth, immediately anterior to right testis, 0.075-0.100 long, 0.067-0.090 wide; uterus mostly posttesticular, entering metraterm sac near middle of spinose portion. Genital atrium unarmed; genital pore median, preacetabular. Vitellaria consisting of 2 lateral groups of numerous follicles, mostly posttesticular. Eggs 24-30 by 16-20 μ. Excretory vesicle long, tubular, extending to ventral sucker; pore terminal.

The present species is referred to *Diplomonorchis* even though the ovary is spherical and not lobed as in other members of the genus. That feature, the more extensive vitellaria, and perhaps much longer excretory vesicle distinguish *D. sphaerovarium* from all other species of *Diplomonorchis*. Together these characteristics may be of generic value but until other species having those features are found, we prefer to broaden the concept of the genus *Diplomonorchis* to include those characters. The genus *Diplomonorcheides* Thomas (1959) would then differ from *Diplomonorchis* only in having a bipartite seminal vesicle.

45


46

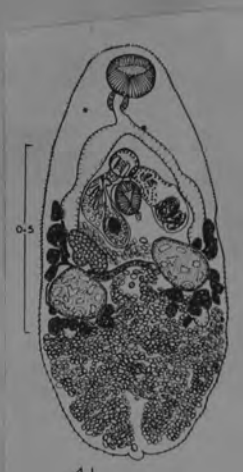
Diplomonorchis emended

Monorchiidae; subfamily Monorchiinae; body oval to elongated. Cuticle spinose. Ventral sucker in anterior half of body; ceca extending to posterior margin of testes or beyond. Testes 2, usually symmetrical, inter- or extracecal. Cirrus sac with unipartite seminal vesicle, pars prostatica and spiny cirrus. Ovary entire or lobed, pretesticular, to right of midline; metraterm sac present, anterior region spinose; uterus extensive. Genital pore midventral, preacetabular. Vitelline follicles postacetabular, lateral, in gonadal zone. Excretory vesicle tubular. Parasites in intestines of marine fishes. Type species: *D. leiostomi* Hopkins, 1941; other species: *D. brevivitellosus* (Manter, 1940) Hopkins, 1941 (Synonym: *Paramonorcheides brevivitellosus*); **D. myrophitis** n.sp.; **D. micropogoni** n.sp.; **D. hopkinsi** n.sp.; **D. sphaerovarium** n.sp.

Diplomonorchis **myrophitis** n.sp.
Nahhas & Cable, 1964
Figures 41 and 42

Host: Myrophis punctatus (J).
Site: intestine.
Holotype: U.S.N.M. 60285.

Description based on 3 specimens. Body oval, 0.887-1.062 long, 0.347-0.513 wide. Cuticle with spines close together anteriorly becoming sparse posteriorly. Eye-spot pigment present. Oral sucker 0.097-0.108 long, 0.105-0.113 wide; ventral sucker in middle third of body length, 0.072-0.075 long, 0.054-0.072 wide; sucker ratio 1:0.63-0.70. Prepharynx absent; pharynx 0.045-0.053 in diameter; esophagus about as long as pharynx; ceca extending short distance posterior to testes. Gonads in middle third of body. Testes 2, 0.113-0.140 long, 0.108-0.167 wide, entire, symmetrical, lateral portions extracecal. Cirrus sac to right of acetabulum, 0.200-0.253 long, 0.090-0.100 wide, extending posteriorly to mid- or posterior level of ovary, enclosing seminal vesicle, small inconspicuous pars prostatica, and spiny cirrus. Metraterm sac 0.167-0.213 long, 0.067-0.090 wide, posterior 3/5 non-spiny, anterior part spinose; spines of metraterm and cirrus wedge-shaped 15-17 μ long. Ovary



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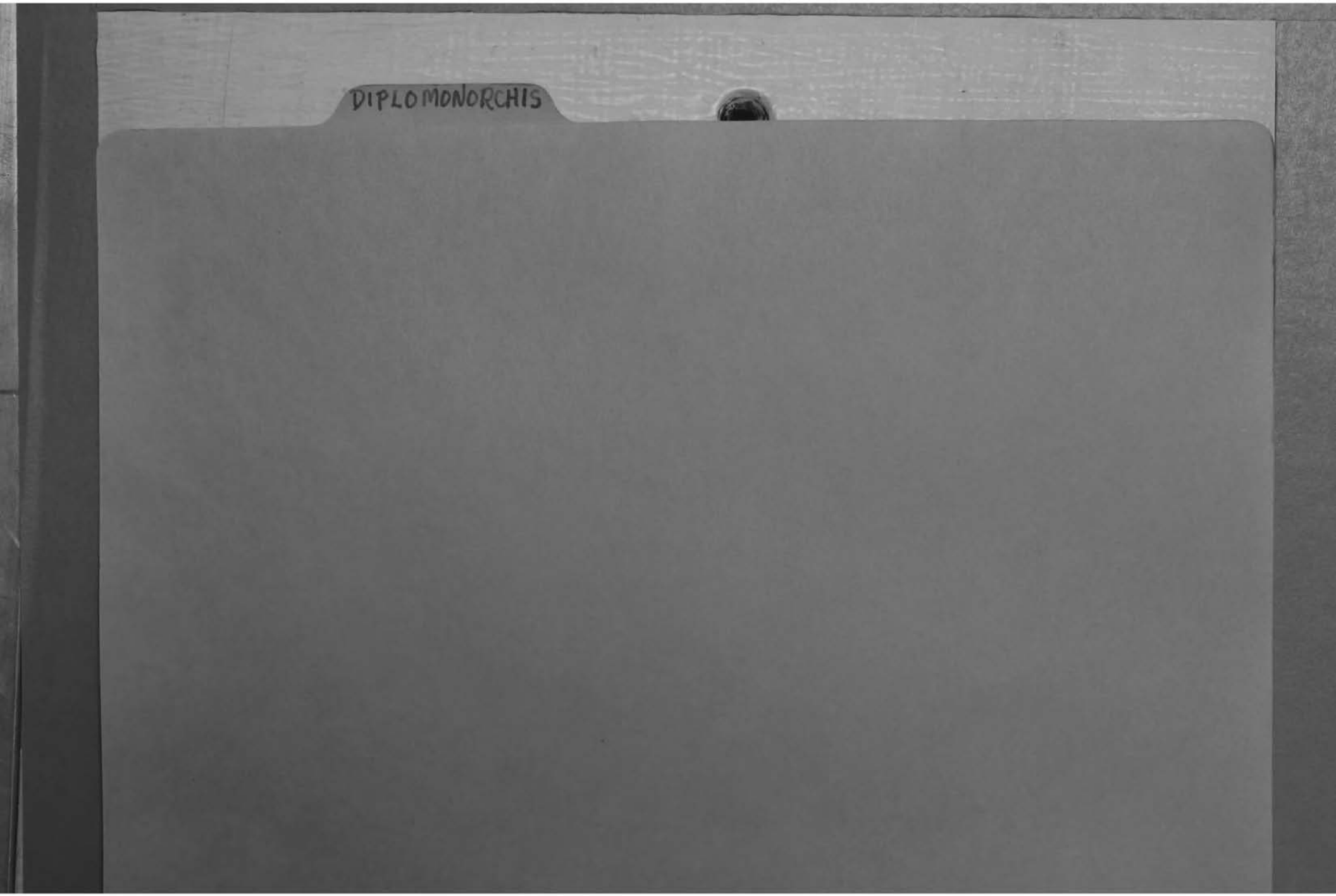
distinctly trilobed, to right of midline, 0.113-0.133 long, 0.063-0.098 wide; seminal receptacle absent; Mehlis' gland posteromedian to cirrus sac; uterus voluminous, mainly posttesticular, entering median side of spinose anterior portion of metraterm sac. Genital atrium unarmed, but appears to be spinose when occupied by partly everted cirrus; genital pore midway between acetabulum and intestinal bifurcation. Eggs numerous, 20-24 by 15-17 μ. Vitellaria in lateral groups of 10-12 follicles, extending from about midacetabular level to ends of ceca. Excretory vesicle tubular; pore terminal.

In both *Diplomonorchis leiostomi* Hopkins, 1941, and *D. bivitellosus* (Manter, 1940) the testes are extracecal and the ceca extend almost to the posterior end of the body whereas in *D. myrophitis* the ceca are overlapped by the testes and terminate a short distance posterior to them. Other differences are the more anterior position of the testes and distribution of the vitellaria in *D. myrophitis*.

Diplomonorchis sphaerovarium
Nahhas and Cable, 1964

Host: *Ophichthus gomesi* (1 of 1)*.
Site: Intestine.
Specimen deposited: U. S. N. M. Helm. Coll. No. 71314.

Discussion: My specimens differ somewhat from the published description. In some, the gonads are irregularly shaped and in others the ovary has three to four indistinct lobes, suggesting that the species is not as atypical as Nahhas and Cable (1964:209) suspected. The large gland cells in the forebody may extend into the hindbody, and the esophagus is not necessarily shorter than the pharynx. Some mature worms are 0.71 long, although immature worms are often larger. Dr. R. M. Cable lent a slide with 12 immature specimens which revealed spines in the posterior portion of the prepharynx, as in my material. The seminal vesicle in some of my specimens appears indistinctly bipartite. In describing *D. sphaerovarium*, Nahhas and Cable (1964:209) broadened the concept of the genus *Diplomonorchis* so that it differs from *Diplomonorcheides* Thomas, 1959, only in possessing species with a unipartite rather than bipartite seminal vesicle. Because Thomas (1959, Figures 9 and 10) figured the seminal vesicle of *Diplomonorcheides magnacetabulum* as being clearly unipartite, I propose *Diplomonorcheides* as a synonym of *Diplomonorchis*, with *Diplomonorchis magnacetabulum* (Thomas, 1959) as a new combination.


DIPLOMONORCHIS

Genolopa Linton, 1910

Syn. *Paraproctotrema* Yamaguti, 1934

Generic diagnosis. — Monorchiidae, Lasiotocinae: Body more or less fusiform, spinulate. Oral sucker napiform or funnel-shaped, small; prepharynx distinct; pharynx relatively large or small; esophagus short. Ceca terminating at posterior extremity or at about one third of body length from posterior extremity. Acetabulum in middle third of body. Testes single, postacetabular; cirrus pouch extending backward beyond acetabulum. Genital pore pre-acetabular. Ovary compact or lobed, submedian, pretesticular. Vitellaria in symmetrical bunches of follicles in acetabulo-testicular zone. Uterus occupying all available space of hindbody, may or may not form muscular bulb as it opens into the terminal organ near the genital atrium. Excretory vesicle small, with terminal pore, giving off anteriorly a pair of lateral collecting vessels, each of which divides at the level of the anterior end of the acetabulum into an anterior and a posterior branch. Flame cell formula: 2[(2+2)+(2+2)] = 16 in *G. beauforti* Hopkins, 1941. Parasitic in intestine of marine fishes.

Genotype: *G. ampullacea* Linton, 1901 (Pl. 6, Fig. 72), in *Haemulon, Bathystoma, Brachygenys, Synodus;* Florida.

Other species:

G. beauforti Hopkins, 1941 in *Orthopristis chrysopterus;* Beaufort, N. C.

G. cacuminata Nicoll, 1915, in intestine and swim-bladder of *Pomadasis hasta;* N. Queensland.

G. elongata Manter, 1931, in *Menidia menidia;* Beaufort, N. C.

G. fusiformis (Yamaguti, 1934) in *Plectorhynchus pictus;* Inland Sea of Japan.

G. himezi (Yamaguti, 1951) n. comb. (Pl. 5, Fig. 60), in *Upeneoides bensasi;* Japan.

G. lintoni (Manter, 1931) in *Orthopristis chrysopterus, Menidia menidia;* Beaufort.

G. longovata Hopkins, 1941, in *Orthopristis chrysopterus;* Beaufort, N. C.

G. minuta Manter, 1931, in *Menidia menidia* and *Fundulus majalis;* Beaufort, N. C.

G. trifolifer Nicoll, 1915, in *Pomadasis hasta;* North Queensland.

G. truncata Linton, 1910, in *Haemulon plumieri* and *H. sciurus;* Dry Tortugas, Florida.

~ OVER ~

GENOLOPA
~~PROCTOTREMA~~ Monorchidae

Syn: PARAPROCTOTREMA Yamaguti, 1934

Proctotrematinae nom. nov. Body spindle shaped, covered with minute spines. Numerous cutaneous gland cells in forebody. Oral sucker subterminal, usually napiform. Prepharynx distinct. Pharynx relatively large. Esophagus a little longer than pharynx. Ceca terminating at about 1/3 of body length from posterior end. Acetabulum definitely larger than oral sucker, at about 1/3 to ½ body length from anterior end. Testes single, longer than broad, postequatorial. Cirrus pouch extending backwards to ovarian level, containing oval seminal vesicle at its base. Pars prostatica and prostatic cells well developed. Cirrus thickly covered with bristle-like spines. Ovary lobed or entire, posterolateral or occasionally anterolateral to acetabulum. Vitellaria lateral, in acetabulotesticular zone, consisting of large compact follicles. Uterus occupying entire posttesticular region; its terminal part surrounded by small muscular bulb, opening into elongate metraterm near its distal end. Genital atrium spiny, opening in front of acetabulum. Eggs numerous. Excretory system ? Parasitic in marine fishes.

Type species: Paraproctotrema fusiforme Yamaguti
Other " : Paraproctotrema cacuminatum (Nicoll) Yam.
P. brevicaecum

Yamaguti suggests that perhaps G. elongata Manter should be transferred to this genus

Differs from Proctotrema in that
1. The oral sucker is not funnel-shaped but napiform.
2. Pharynx large in relation to oral sucker
3. Muscular bulb at end of uterus.
4. Uterus opens into the distal end of the vagina.
5. Oral sucker not larger than ventral sucker

Differs from Genolopa in
3. above
4. Lacks long spines on median atrium curve of [illegible])
4. above
5. Ovary more deeply lobed.

Genolopa ampullacea Linton, 1910

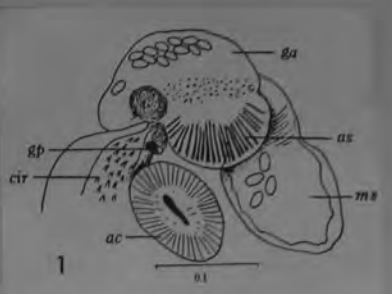
(Figs. 1–6)

Hosts: Haemulon albium Cuv. & Val.*; *H. carbonarium* (Desmarest)*; *H. flavolineatum* (Desmarest); *H. macrostomum* Günther, type host; *H. plumieri* (Lacépède); *H. sciurus* (Shaw); *Synoeus foetens* (Linn.)*

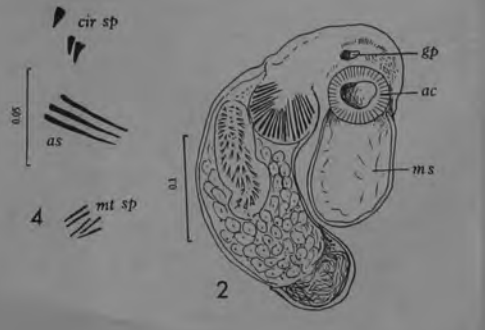
Location: Ceca; intestine; rarely stomach.

Frequency: common in *Haemulon*. Linton states that his 1907 *Monostomum* species from *Haemulon flavolineatum* and *Bathystoma striatus* at Bermuda are this species. There is considerable doubt if the species from *Bathystoma* is *G. ampullacea*. At least, a few specimens of monorchids collected by me from *Bathystoma rimator* at Tortugas are not *G. ampullacea*. They are somewhat macerated and not considered favorable enough for description.

Diagnosis: Body shape varying from almost circular to elongate, usually ovoid; size 0.425 to 1.275 mm. by 0.187 to 0.365 mm. Oral sucker 0.050 to 0.096 mm. in transverse diameter, not funnel-shaped. Acetabulum one-fourth to one-half body length from anterior end (usually about one-third), 0.034 to 0.062 mm. in diameter. Sucker ratio approximately 3:2. Prepharynx short; pharynx subspherical, somewhat longer than wide, 0.017 to 0.040 mm. wide by 0.017 to 0.042 mm. long; esophagus slightly longer than prepharynx; bifurcation approximately midway between suckers; ceca extending to near posterior end of body. Genital pore median or submedian, a short distance anterior to acetabulum. Testis in posterior half of body, variable in shape, may be longer than wide or wider than long. Posttesticular space variable, usually about one-third body length. Cirrus sac large (in an 0.802 mm. long specimen, 0.225 by 0.099 mm.), curving around right border of acetabulum. Cirrus armed with short, conical, almost triangular spines about 12μ long. Genital atrium large, with pocket-like extension along median side of cirrus sac (Fig. 1–2). This atrial sac is armed with large, blade-like spines 34 to 36μ long. Ovary close to anterior end of testis, to the right, opposite base of cirrus sac, sub-globular to slightly lobed. A rudimentary seminal receptacle at least sometimes present, but sperm cells occur in early coils of uterus. Vitellaria of about eight follicles on each side at level of ovary or between ovary and acetabulum. Uterus usually filling hindbody. Metraterm sac somewhat smaller than cirrus sac (in an 0.802 mm. long specimen, 0.150 by 0.085 mm.), with circular muscles often causing a slight constriction near its middle between the spiny metraterm and the basal vesicle. Metraterm spines slender, delicate, about 17μ long. Eggs 18 to 22 by nine to 11μ. Excretory vesicle a modified I-shape, bending to the left at posterior end of cirrus sac and extending along side of metraterm to level of acetabulum.



From MANTER, 1942



Genolopa ampullacea Linton 1910

Hosts.—*Haemulon album* Cuv. & Val., margate-fish; *Haemulon parra* (Desmarest), sailor's choice [new most record]; *Haemulon plumieri* (Lacépède), white grunt; *Haemulon sciurus* (Shaw), blue-striped grunt.

Location.—Pyloric ceca.

Locality.—*H. album* and *H. sciurus* from Lerner fish pens, N. Bimini; *H. sciurus* from N. shore, N. Bimini; *H. parra* and *H. plumieri* from 1/2 mi. S. of S. Bimini.

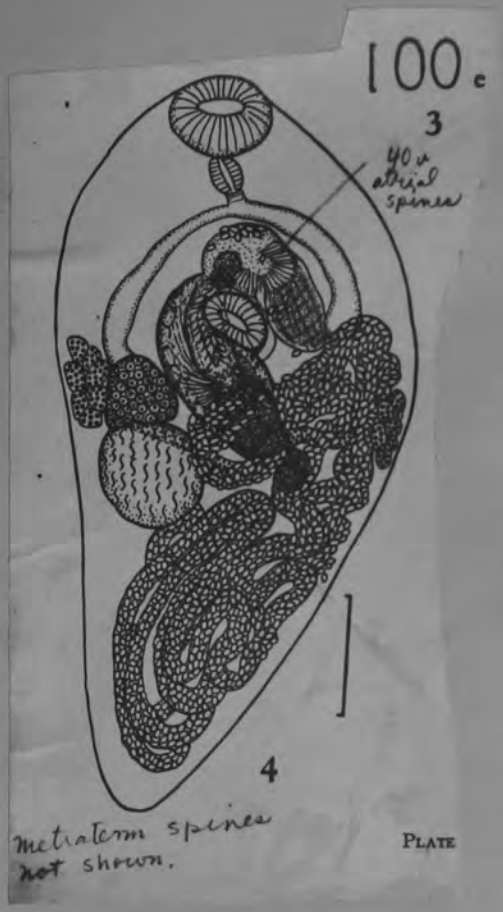
Sogandares, 1959

-OVER-

Genolopa ampullacea Linton, 1910
Synonym: ***Genolopa longicaudata* Siddiqi & Cable, 1960.
Hosts: Bathystoma striatum (J); *Haemulon album* (J); **H. bonariense* (J); *H. flavolineatum* (C, J); **H. melanurum* (C); *H. sciurus* (J). JAMAICA, CURAÇAO

Site: ceca and intestine.
Siddiqi and Cable (1960) described *Genolopa longicaudata* from *Odontoscion dentex* and, in a key, distinguished it from *G. ampullacea* on the basis of having a post-testicular space "3 or 4 times length of testis" and a metraterm sac "reaching well posterior to ventral sucker." Our more abundant material shows that these features are highly variable; *G. longicaudata* accordingly is reduced to synonymy with *G. ampullacea.*

FROM NAHHAS AND CABLE (1964)



Genolopa ampullacea Linton, 1910
Genolopa longicaudata Siddiqi and Cable, 1960.
Hosts: *Anisotremus virginicus* (4 of 6)*; *Haemulon aurolineatum* (5 of 7)*; *Haemulon flavolineatum* (2 of 2); *Haemulon parrai* (7 of 7); *Haemulon plumieri* (3 of 5); *Haemulon sciurus* (6 of 6).
Site: Pyloric caeca and anterior intestine.
Discussion: The considerable range in characteristics of this species has been noted by Manter (1942:351), Nahhas and Cable (1964:201), and others. The eggs are 13 to 20 by 9 to 13 microns and usually smaller than those described by Linton (1910:78) and Manter (1942:351). The atrial spines are up to 49 microns long, the ovary is subglobular to distinctly trilobed, and the oral sucker may be pyriform in shape.

From: Overstreet, 1969.

G. ampullacea from Hopkins 1941

Genolopa ampullacea Linton, 1910 (FIGURE 36)
Host: *Haemulon plumieri.*
Site: intestine.
Locality: Boqueron Bay, P. R.
Deposited specimen: No. 39328.

from Siddiqi & Cable, 1960

G. ampullacae Linton, 1910 Fig. 3.

Description is based on a single speciment from *Cheilinus lunulatus* locally called "Daffan". It measures 0.8 long by 0.36 maximum width; anterior end broad and posterior end converging. Cuticle spinose especially at anterior end. Oral sucker measuring 0.11 × 0.12, slightly sub-terminal. Pharynx 0.05 in diameter. Oesophagus short, 0.02 long ; intestinal caeca slightly sinuous anteriorly extending near posterior end, terminating at 0.08 from posterior extremity. Ventral sucker smaller than oral sucker 0.09 in diameter, nearly median; in second quarter of body length, 0.11 from oral sucker. Ratio of oral to ventral suckers is 1.3 : 1.

Testis single, slightly sub-median, towards the right side, slightly overlapping right caecum smooth, spheroid, measuring 0.15 by 0.12, in third quarter of body length. Cirrus pouch elongate. sinuous, extending to posterior of acetabulum, almost to mid-level of testis and containing a vesicula seminalis. Genital pore immediately pre-acetabular, nearly median.

Ovary intercaecal, sub-median towards the right side, anterior to testis, smooth, spheroid, 0.05 in diameter, in anterior part of third quarter of body length, receptaculum seminis sinuous. Vitellaria consist of few large follicles, clustered in two symmetrical groups on each side, occupying area between acetabulum and ovary, overlapping ceaca, each group containing nine to ten irregular follicles. From each vitelline group passes a sinuous vitelline duct and meet at mid-level of mid-testis, just posterior to posterior end of cirrus sac, forming a V-shaped duct. Uterus coiled, extending to blind ends of caeca, partly extra-and partly intercaecal and extending anteriorly to a short distance posterior to acetabulum at level of vitelline follicles. Metraterm sac elongate, slightly sinuous, towards left side and extending at level posterior to acetabulum close to left group of vitelline follicles and containing a large spherical vesicle at its posterior end and an anterior narrow region that leads to the common genital opening. Eggs oval, averaging 0.023 × 0.011.

Excretory vesicle in the form of a large nearly spherical vesicle at posterior end of body no other details of the excretory system could be made out.

Discussion : This species is redescribed here on account of the position of the vitelline groups of follicles, the extent of the metraterm sac and also to record a new host and locality as mentioned above.

FIG. No. 3 : *Genacopa ampullacae* Linton, 1910.

from Nagaty and Abdel-aal, 1972

~~Proctotrema~~ Genolopa

Monorchidae

~~Paraproctotrema~~ brevicaecum n. sp. Manter, 1942

(Figs. 11–13)

Host: Caranx bartholomaei Cuv. & Val.

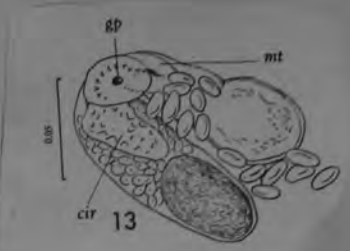
Location: Intestine.

Frequency: Five specimens in one of two hosts.

Diagnosis: Body elongate; tapering at each end, more or less spindle-shaped; widest near middle; 0.600 to 0.930 mm. by 0.142 to 0.232 mm.; spined with relatively large spines becoming sparse posteriorly. Oral sucker usually slightly wider than long, 0.036 to 0.054 mm. in transverse diameter. Acetabulum rather weak but larger than oral sucker, 0.054 to 0.066 mm., about one-third body length from anterior end although when forebody is contracted only about one-fourth. Sucker ratio 1:1.22 to 1:1.46. Prepharynx very short or lacking; pharynx slender and elongate, 0.027 to 0.034 mm. long by 0.017 to 0.020 mm. wide; esophagus 0.044 to 0.156 mm. long, several times length of pharynx except when forebody is contracted when it is not quite twice length of pharynx; ceca with thick walls, extending only slightly past acetabulum, ending at level of vitellaria (usually ventral to anterior half of vitellaria, sometimes as far back as posterior half). Genital pore median, just anterior to acetabulum. Testis indistinct, variable in shape and size, subspherical to elongate, just posterior to level of vitellaria. Cirrus sac large, claviform, 0.112 to 0.143 mm. long by 0.044 to 0.056 mm. wide, extending posterior to acetabulum to posterior level of vitellaria; seminal vesicle ovoid; cirrus with very short, broad spines often rudimentary with rounded rather than pointed ends (Fig. 13). A ring of spines in what seems to be a muscular subspherical genital atrium might be interpreted as on a partly everted cirrus. More likely the atrium is spined as in the type species of the genus. Ovary ovoid, small, indistinct, closely anterior to and overlapping the anterior edge of the testis ventrally. Vitellaria in two, more or less compact, lateral masses, between acetabulum and testis. Vitelline reservoir dorsal to ovary. Uterus practically filling hindbody, partially obscuring ovary and testis. Metraterm sac not quite as large as cirrus sac, 0.078 to 0.102 mm. long by 0.037 to 0.042 mm. wide, containing a terminal very thick-walled muscular bulb apparently without spines and a basal vesicle. Eggs 17 to 20 by eight to 10μ usually 19 by 9μ. Excretory vesicle small and sac shaped.

Discussion: The genus *Paraproctotrema* Yamaguti, 1934 differs from *Proctotrema* in that the oral sucker is not larger than the acetabulum, there is a muscular bulb at the distal end of the uterus, the atrium is spined, the metraterm unspined. Yamaguti included two species, *Paraproctotrema fusiforme*, the type, and *P. cacuminatum* (Nicoll, 1915), and suggested that *Genolopa elongata* Manter, 1931 probably should be included (evidently because of its sucker ratio). *P. brevicaecum* differs from the generic diagnosis in that the muscular uterine bulb is definitely within the metraterm sac and hence seems to be the metraterm itself (unspined, as in the type species). *P. brevicaecum* differs from *P. fusiforme* in much smaller size, shorter ceca, unlobed ovary, shape of cirrus spines, and smaller eggs. It differs from *P. cacuminatum* in smaller size, shorter ceca; shorter prepharynx, and longer esophagus.

The generic disposition of *Genolopa elongata* is difficult and uncertain. It cannot belong to *Genolopa* as limited above and it bears very marked resemblance to *P. brevicaecum* (e.g. in size, sucker ratio, short ceca, fused vitelline follicles, and indistinct testis), but it has a spined metraterm, while the spined atrium and the muscular bulb cannot be noted on specimens available. At the same time, it differs from all species in *Proctotrema* in its sucker ratio.



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11


12

(OVER)

Genolopa brevicaecum (Manter, 1942) Manter and Pritchard, 1961

Synonym: Paraproctotrema brevicaecum Manter, 1942.

Host: Caranx bartholomaei (J). JAMAICA

Site: intestine.

Seventeen specimens from 2 fish are in close agreement with Manter's description and measurements. The majority of the worms are elongate, spindle-shaped but a few are pyriform. They also confirm the presence of the atrial spines reported by Manter and Pritchard (1961). In most specimens, the spines were difficult to distinguish from those on the cirrus but 2 worms with that organ retracted, show a ring of spines around the genital atrium. The metraterm is unspined.

FROM NAHHAS AND CABLE (1964)

19??

9. **Genolopa bychowskii** Zhukov, ~~sp. n.~~ (рис. 3, *2*). Обнаружен в кишечнике 1 экз. *Parastromateus niger* эстуария р. Хугли (интенсивность заражения 6 экз.). Длина половозрелых особей (по 5 экз.) 0.94—1.22, ширина 0.16—0.23 мм. Передний конец покрыт легко отпадающими шипиками длиной 0.012 мм. Ротовая присоска 0.050—0.071×0.050—0.075 мм, глотка 0.033—0.050×0.037—0.046 мм. В области глотки многочисленные пигментные пятна. Пищевод значительной длины. Брюшная присоска 0.087—0.11×0.087—0.10 мм. Кишечные стволы тянутся до заднего конца тела. Яичник трехлопастной, семенник овальный, 0.10—0.14×0.062—0.092 мм. Они расположены в задней части тела червя и обычно закрыты многочисленными петлями матки. Желточники лежат латерально на уровне брюшной присоски, представлены мелкими фолликулами, более 10 с каждой стороны. Половая пора открывается медианно над брюшной присоской. Сумка цирруса 0.27—0.39 мм, простирается далеко за нижний край брюшной присоски. Метратерм впадает в орган Лоосса, размеры которого 0.10—0.14×0.035—0.092 мм. Яйца 0.014×0.009 мм, одеты толстой оболочкой, характеризуются постоянством размеров. Расположением половых желез в задней части тела червя, длиной сумки цирруса, размерами и округлой формой яиц отличается от всех известных представителей рода *Genolopa*. Голотип и паратипы хранятся в коллекциях Зоологического института АН СССР.

Хозяин: *Parastromateus niger* (Bl.). Локализация: кишечник. Место обнаружения: эстуарий р. Хугли (Бенгальский залив). Материал: 6 экз.

Genolopa cheilini — Fig. 2. Nagaty and Abdel-aal

Twenty four trematodes were stained and mounted and the following description is based only on the mature seven of these. They were obtained from *Cheilinus lunulatus* locally called "Daffan", from Epinephalus sp. locally called "Koshar" and from another fish locally called "Ridy". Body elongate, 0.9 to 1.76 long and 0.3 to 0.44 in maximum breadth about the middle of the body, tapering both anteriorly and posteriorly. Cuticle spinose, especially at anterior end. Oral sucker terminal, 0.12 to 0.17 by 0.14 to 0.17; pharynx 0.05 to 0.09 in diameter; oesophagus elongate 0.02 to 0.14 long; intestinal caeca extending to near posterior end, terminating at 0.03 to 0.08 from posterior extremity. Ventral sucker smaller than oral, 0.11 to 0.15 by 0.09 to 0.15, median or sub median, nearly in second quarter of body length, 0.2 to 0.5 from oral sucker. Ratio of oral to ventral suckers is 1.2 : 1.

FIG. No. 2 : *Genolopa cheilini* n. sp.

Testis single, intercaecal, smooth, ovoid, nearly median, measuring 0.14 to 0.24, nearly in third quarter of body length; cirrus sac elongate, extending posterior to acetabulum to mid-distance between acetabulum and testis, slightly overlapped by acetabulum and either towards its right or left sides, containg a vesicula seminalis. Genital pore immediately preacetabular, nearly median.

Ovary intercaecal, sub-median either lateral or antero-lateral to anterior border of testis smooth, nearly spheroid, measuring 0.06 to 0.12 by 0.06 to 0.09, nearly in third quarter of body length. Receptaculum seminis could not be detected. Vitellaria consist of few large follicles, clustered in two symmetrical groups on each side, occupying the area between acetabulum and testis, each group is composed of 7 to 9 follicles external to and overlapping intestinal caeca; from each vitelline group comes out a vitelline duct, the two uniting together to form a well developed transverse common vitelline duct, just anterior to anterior border of ovary.

Uterus occupy the area between acetabulum and posterior end of body, both intra- and extra-caecally. Metraterm sac almost lies across body at level of acetabulum, either to the right or left sides and verlapping intestinal caeca; it contains a large spherical vesicle at its base and distal part that leads to the common genital opening. Eggs are oval, averaging 0.02 × 0.008.

Excretory vesicle is tubular, its anterior part is not distinct.

Affinities : This species resembles most *G. ampullacae* Linton, 1910 but differs from it in having : (1) testis nearly median instead of being sub-median, (2) ovary lateral or antero-lateral instead of being immediately anterior to testis, (3) cirrus sac reaching almost to mid-distance between acetabulum and testis, instead of extending to level of testis and (4) they differ in the shape of the body.

76. *Paraproctotrema fusiforme* n. g. n. sp.

DESCRIPTION. Four specimens of this species were obtained from the large and small intestines of *Plectorhynchus pictus* at Tarumi. Three of them were fixed in Schaudinn's solution under cover glass pressure and the other was fixed in alcohol. They were all stained with hematoxylin-eosin and mounted in balsam.

The body is typically spindle-shaped with habitually pointed ends and covered with minute spines. The flattened type is 2.39 mm long and 0.78 mm broad at about the middle of the body. The cutaneous gland cells are numerous in the forebody. The subterminal small oral sucker is 0.11×0.125 mm, napiform and not funnel-shaped as in *Proctotrema*. There is a conspicuous prepharynx 0.04 mm long. The globular pharynx, 0.1 mm in diameter, is large relatively to the oral sucker. The esophagus is 0.15 mm long. The simple ceca extend a little farther backwards than the testis and terminate at the junction of the middle with the posterior third of the body. The acetabulum, about 0.2 mm in diameter, lies at the anterior end of the middle third of the body.

The oval testis, 0.43×0.32 mm, is situated behind the acetabulum. The cirrus pouch is 0.52×0.17 mm, with its posterior end a little behind the acetabulum and contains at its base an oval vesicula seminalis measuring 0.12 × 0.09 mm. The pars prostatica is distinctly developed and surrounded by numerous prostatic cells. The cirrus closely beset with long bristle-like spines joins the female terminal organ at the base of the genital sinus which opens immediately in front of the acetabulum.

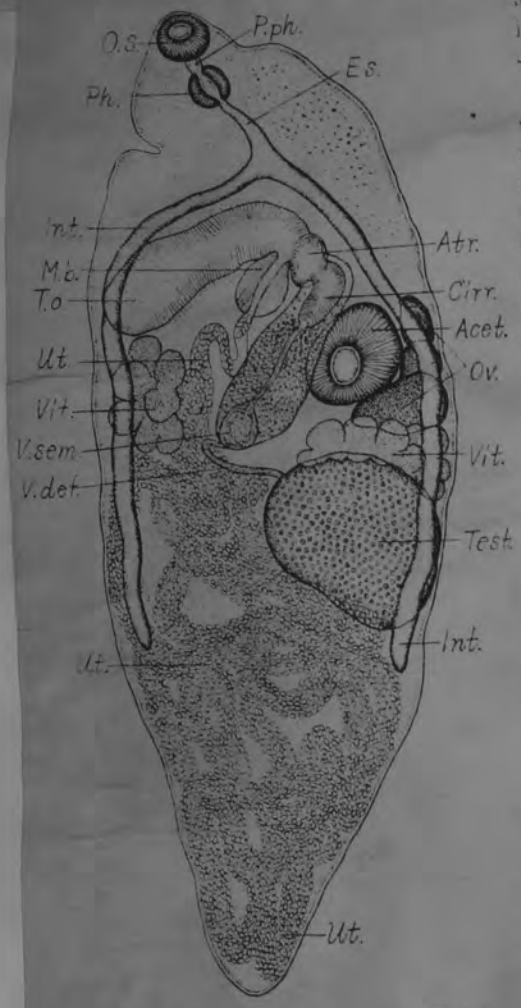


Fig. 72. *Paraproctotrema fusiforme*; dorsal view. Type 2.39×0.78 mm.

The trilobate ovary is situated posterolateral to the acetabulum. The ovarian complex could not be made out. The vitellaria are composed of seven to nine large compact follicles arranged in the lateral fields between the level of the acetabulum and that of the testis. The uterus occupies the entire available space of the hindbody; its terminal part is surrounded by a peculiar bulb consisting of very fine muscle fibers directed obliquely to the uterus, and opens into the female terminal organs near its distal end. This terminal organ measures 0.5×0.17 mm and its greater posterior part, beset with bristle-like spines more sparsely than the distal portion, functions as a reservoir for eggs. The very numerous, elongate oval eggs are light brown and measure 0.021×0.0114 mm. The excretory system could not be worked out.

The mature alcoholic specimen not subjected to pressure measures 1.15 × 0.4 mm; the oral sucker is 0.08 mm in diameter, the prepharynx 0.04 mm long, the esophagus 0.1 mm long, the pharynx 0.063 mm in diameter; the acetabulum, 0.113 × 0.14 mm, lies at about the middle of the body. The genital organs could not be examined with success on account of the excessive thickness of the middle third of the body, where they are situated, but the ovary is clearly visible on the right side and a little in front of the acetabulum.

Fig. 73. Habitual form of *Paraproctotrema futiformis* fixed in alcohol.

Discussion. This species bears such close resemblances to the members of *Proctotrema* that on cursory examination it may readily be assigned to that genus, but there are fundamental differences in the character of the oral sucker, in the relative size of the pharynx, oral and ventral suckers, in the presence of a muscular bulb surrounding the distal end of the uterus, etc. These differences are undoubtedly of generic importance and therefore I propose a new genus, *Paraproctotrema*. This may be objected to, but after all it is a matter of personal opinion. At least my species cannot be included in *Proctotrema* as defined by Odhner, without making important emendations in its diagnosis.

Genolopa cacuminata Nicoll, 1915, belongs to this new genus, although it is stated to have a funnel-shaped oral sucker. It is very reasonable that Nicoll hesitated in assigning his species to *Genolopa*. *G. elongata* Manter, 1931, may probably better be transferred to *Paraproctotrema*.

FAMILY MONORCHIIDAE Odhner, 1911

Genolopa longicaudata ~~n. sp.~~ (figure 35) Siddiqi & Cable, 1960

Description based on 3 specimens with characters of the genus. Body 0.851 to 0.963 long, 0.136 to 0.264 wide, with broadly rounded ends, forebody with vermiform cutaneous glands. Cuticle spinose, eye-spot pigment absent. Oral sucker 0.040 to 0.052 by 0.054 to 0.067, subterminal. Ventral sucker 0.030 to 0.039 by 0.037 to 0.042, submedian, at about one fifth body length from anterior end. Sucker ratio 1:0.68. Prepharynx very short, pharynx 0.021 to 0.031 in diameter, esophagus short, intestinal bifurcation about midway between suckers, ceca simple, concealed by eggs posteriorly and their extent not observable in whole mounts. Genital pore median, immediately anterior to ventral sucker; genital atrium spinose. Cirrus sac extending posteriorly from genital pore as far as ovarian level, containing seminal vesicle, prostate cells, tubular pars prostatica, and spined cirrus. Testis single, irregular, 0.127 to 0.150 by 0.082 to 0.112, to right of midline, about equatorial, partly concealed by eggs. Ovary entire, 0.076 to 0.109 by 0.075 to 0.082, on right immediately anterior to testis. Seminal receptacle absent. Vitelline follicles large, in 2 lateral groups a little longer than ovary, at or slightly anterior to its level, depending on contraction of the worm. Uterus voluminous, occupying all available space posterior to testis, then with convolutions extending anteriorly in mid-region to enter metraterm sac at junction of its spiny anterior, and vesicular posterior divisions. Metraterm sac large, about two thirds as long as cirrus sac, extending posteriorly to left of ventral sucker. Eggs very numerous, 0.015 to 0.018 by 0.010 to 0.012. Excretory system not observed.

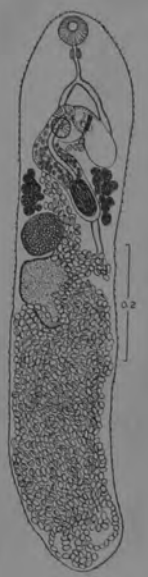
Host: *Odontoscion dentex*.

Site: intestine.

Locality: Punta Arenas, P. R.

Type specimen: Holotype No. 39327.

Genolopa longicaudata resembles *G. pisodontophidis* (Yamaguti, 1938) Skrjabin, 1955, in most respects but differs from that species in length of the hindbody, position of the genital pore, extent of vitellaria, and size of eggs.



35

SYNONYM OF G. AMPULLACEA LINTON, 1910 BY NAHHAS AND CABLE (1964)

Genolopa lunulata [illegible] Fig. 1. Nagaty and Abdel-Aal, 1972

The description of this species is based on a whole mount of one specimen from *Cheilinus lunulatus* locally called "Malas daffan". All measurements are in millimeters. The body is elongate, 1.98 long and 0.39 maximum breadth; cuticle smooth; oral sucker subterminal, 0.13; pharynx 0.07, its anterior border slightly overlapped by oral sucker; oesophagus 0.06 long ; intestinal caeca short, extending to just posterior to posterior border of acetabulum, nearly at mid-level of body length. terminating at 1.15 from posterior extremity ; acetabulum slightly smaller than oral sucker, 0.12 in diameter, submedian, towards the left side, external to left caecum, in anterior part of middle third of body length, 0.30 from oral sucker; ratio of oral to ventral suckers 1.2 : 1.

Testis single, smooth, spheroid, measuring 0.18, median, near posterior extremity, at anterior part of posterior third of body length; cirrus sac large, inverted L shaped, containing a vesicula seminal is interna, the long limb extending posteriorly to level of anterior border of ovary in the intercaecal field, genital pore submedian, immediately anterior to acetabulum.

Ovary pear-shaped, smooth, 0.06 in diameter antero-posteriorly and 0.09 from side to side, sub-median, a short distance anterior to testis and separated from it by uterine coils receptaculum seminis could not be detected; vitelline glands consist of large follicles, clustered in two groups, one at each side, at slightly different levels, the left group lie extracaecal immediately posterior to acetabulum and consist of eleven follicles, while the right group consist of 8 follicles, overlapping the posterior end of right caecum; from the right group comes the vitelline duct, which is an inverted S-shaped, narrow proximally and becomes widened distally at level of ovary; uterus coiled occupying posterior half of body, overlapping the borders of the testis; metraterm joins male duct opening in a common pore. Eggs oval, averaging 0.023 by 0.008. Excretory vesicle not distinct.

Affinities : This species resembles most *G. brevicaecum* Manter, 1942 but differs from it in having : (1) oesophagus short instead of being very long, (2) testis spheroid instead of being sub-spherical to elongate and (3) testis in posterior third of body length instead of being just posterior to level of vitellaria.

FIG. No. 1 : *Genolopa lunulata* n. sp.

Genolopa microsoma sp. nov.
Рис. 1 Lebedev, 1968

Хозяева: *Caranx lutescens, Trachurus novae-zelandiae* (сем. *Carangidae*) (12 и 40 вскрытий соответственно).

Локализация: пищеварительный тракт.

Место обнаружения: Тасманово море, Большой Австралийский залив.

Экстенсивность инвазии: у *C. lutescens* 21,5%; у *T. novae-zelandie* 2,5%. Интенсивность: 3—270 экз. трематод у одной рыбы.

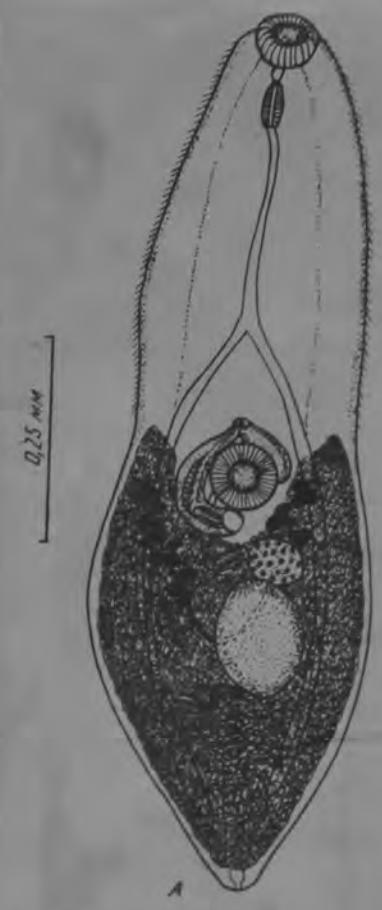
Голотип: из кишечника *C. lutescens* длиной 44 *см* (препарат № НЗ —145).

Описание. Тело трематоды плотное, 1,01 *мм* в длину и 0,35 *мм* в ширину, с небольшим перехватом примерно на уровне брюшной присоски. До этого перехвата кутикула снабжена небольшими острыми шипиками. Ширина тела на уровне брюшной присоски 0,26 *мм*. Ротовая присоска субтерминальная, диаметром 0,07 *мм*. Префаринкс 0,01 *мм* длиной, фаринкс вытянутый, 0,05×0,02 *мм*. Пищевод длиной 0,23 *мм*. Бифуркация кишечника ближе к брюшной присоске. Ветви кишечника простые, идут до заднего конца тела. Семенник овальной формы, 0,12×0,07 *мм*, расположен субмедианно в задней трети тела. Бурса цирруса дугообразна, огибает брюшную присоску с правой стороны, размером 0,19×0,04 *мм*. В проксимальной ее части располагается овальный семенной пузырек диаметром 0,04 *мм*. Простатическая часть обособлена, трубкообразной формы, окружена хорошо развитыми простатическими клетками. Циррус длинный, покрыт шипами. Вместе с органом Лоосса циррус входит в половой атриум, открывающийся на уровне переднего края брюшной присоски. Половой атриум расположен медианно. Орган Лоосса имеет толстую мышечную стенку, выстланную изнутри небольшими шипиками, располагается слева от брюшной присоски, размер 0,12×0,04 *мм*. Яичник овальный, 0,07 *мм* в диаметре, располагается впереди семенника. Желточники расположены дугообразно, состоят из гроздевидных фолликулов, с каждой стороны их по 7—8. Желточный резервуар выражен слабо, расположен примерно у середины тела дорзальнее семенника. Матка очень объемиста, занимает всю заднюю часть тела, доходя впереди до брюшной присоски. Дистальная петля матки входит в орган Лоосса примерно в его средней части с внутренней стороны. Яйца весьма многочисленны, с тонкой оболочкой, их размеры —0,016×0,010 *мм*. Имеется маточный семеприемник.

Изменчивость признаков. У других экземпляров длина тела колеблется в пределах 0,84—1,16 *мм*, наибольшая ширина 0,25—0,35 *мм*. Префаринкс 0,01—0,03 *мм*, фаринкс 0,04—0,05 *мм* в диаметре. Пищевод длиной 0,20—0,58 *мм*. Семенник размером 0,05—0,13×0,05—0,08 *мм*. Бурса цирруса 0,19—0,23×0,04—0,06 *мм*. Семенной пузырек диаметром 0,03—0,04 *мм*. Орган Лоосса 0,12—0,14×0,04 *мм*. Яичник размером 0,05—0,07×0,03—0,05 *мм*. Размеры яиц колеблются в пределах 0,016—0,020×0,008—0,010 *мм*.

Дифференциальный диагноз. По строению тела и топографии внутренних органов наши экземпляры должны быть отнесены к роду *Genolopa* Linton, 1910. Этот род включает в настоящее время 3 вида (*G. ampullacea* Linton, 1910; *G. plecthorhynchi* (Yamaguti, 1954); *G. cacuminata* Nicoll, 1915 и *G. trifolifer* Nicoll, 1915).

Наши экземпляры наиболее близки к *G. cacuminata*, но отличаются от него меньшими размерами, перехватом в средней части тела, а также наличием маточного семеприемника, иногда рудиментарно выраженного только у *G. ampullacea* (Соболев, 1955), весьма отличающегося от описываемого вида *Genolopa microsoma* sp. nov.



Genolopa microsoma sp. nov
щий вид; *Б* — конечные половые протоки

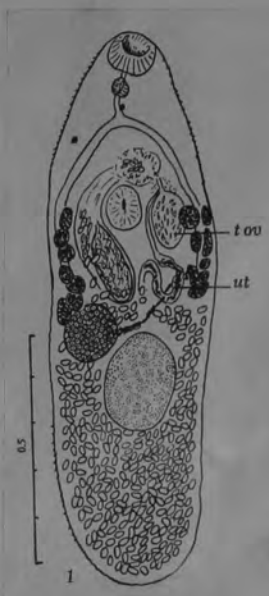
Genolopa oculata n. sp.
(Figs. 1–2) Manter & Pritchard 1961

Host: *Aubula vulpes* (L.) Cuv. (Albuliidae, ladyfish; bonefish); 10 specimens from 1 host.

Location: Intestine.

Holotype: U. S. Natl. Mus. Helm. Coll., No. 39466.

Description (measurements on two): Body spined, 1.206 to 1.212 by 0.355 to 0.368; more broadly rounded at posterior end; conspicuous, definite, asymmetrical eyespots in forebody. Oral sucker 0.104 in diameter; acetabulum very weakly developed, 0.064 to 0.072 in diameter; sucker ratio about 1: 0.65 to 0.7. Forebody about 0.355 or a little more than one-fourth body length. Prepharynx short; pharynx spherical, 0.042 to 0.049 in diameter; esophagus a little longer than pharynx; bifurcation nearer oral sucker than to acetabulum; ends of ceca not visible in most specimens but apparently slightly posterior to testis. Testis, elongate-oval, near middle third of hindbody. Cirrus sac curving around acetabulum to level of ovary; containing an ovoid seminal vesicle, conspicuous prostatic cells, and a short, muscular, unspined cirrus; terminal portion of cirrus sac protruded into atrium (fig. 2), functioning as a cirrus, its surface sometimes with large, plate-like rudiments of spines. Genital pore just preacetabular, submedian. Genital atrium swollen by protrusion of cirrus sac, with few to many scattered spines. Ovary large, subspherical, partly dextral and partly anterior to testis. Vitellaria of large follicles, 6 to 8 on each side from level of acetabulum to anterior edge of ovary or slightly beyond. Uterus filling posttesticular space, entering middle



of terminal organ; metraterm a short, weakly muscular, ovoid or pyriform in shape and unspined. Terminal organ about 0.234 long, or little shorter than cirrus sac. Eggs rather thick-shelled, 24 to 27 by 14 to 16 microns. Excretory vesicle not traced, probably short.

Discussion: This species differs from most others in the genus in having unspined terminal organ and mostly unspined cirrus sac and cirrus, although it does resemble *G. brevicaecum* in these respects. *G. brevicaecum* differs in sucker ratio, its much longer esophagus, shorter ceca, smaller size, and smaller eggs.

Paraproctotrema spinoacetabulum sp. n. (~~Fig.~~ Fischthal and Nasir, 1974 ~~10~~)

Host: *Hemirhamphus brasiliensis* (L.)
Site: Small intestine.
Locality: Los Roques Islands.
Specimen deposited: No. 72878 (holotype).

Description (based on one adult worm): Monorchiidae. Body fusiform, with preacetabular body fold, extremities rounded, 662 long by 208 wide just preacetabular, spined to testicular level. Forebody 155 long; hindbody 430 long; forebody–hindbody length ratio 1:2.8. Eye spot pigment absent. Oral sucker ventroterminal, diameter 63, body spines on rim and entering buccal cavity anteriorly. Preoral space 5 long. Postoral circular muscle ring present. Acetabulum 77 by 82, weakly muscular with very shallow cavity, entirely spined (including concavity). Sucker length ratio 1:1.22, width ratio 1:1.30. Prepharynx 30 long, entering anteroventral part of pharynx; latter 46 by 52, oriented so that lumen extending ventrodorsally at right angle, large relative to oral sucker; esophagus 41 long, emerging from posterodorsal part of pharynx; cecal bifurcation 14 preacetabular; ceca extending to level of posterior margin of testis; postcecal space 230 long, distance 53 per cent of hindbody length. Excretory pore terminal; bladder thick walled, extent obscured by eggs.

Testis median, smooth, 167 by 95, lying 30 postacetabular and 230 from posterior extremity, latter distance 35 per cent of hindbody length. Cirrus sac elongate, crescent shaped, with dextral arch, gradually narrowing toward distal end, 218 by 50, commencing 110 postacetabular, dorsal to testis. Seminal vesicle saccular, 54 by 42. Pars prostatica tubular, 42 by 11, surrounded by prostate cells. Cirrus 123 by 38, completely lined with canine tooth shaped spines, posteriormost spines 10–12 by 6–8, gradually decreasing in size anteriorly, anteriormost spines 3–4 by 2–3. Genital atrium short, tubular, spined. Genital pore sinistral, ventral to left cecum, at level of anterior margin of acetabulum. Ovary smooth, dextroventral to testis, 102 by 60, lying 36 postacetabular. Vitellaria in two lateral, compact masses at acetabulogonadal level, fields 73–88 by 48. Uterus in hindbody, coils relatively few, extending to near posterior extremity, distal end with muscular bulb 22 by 16, entering median side of midlength of terminal organ. Latter 98 by 40, unipartite, club shaped, entirely spined, spines thorn shaped, posteriormost ones 9–10 by 8–10 at base, gradually decreasing in size anteriorly, anteriormost ones 7 by 5–6. Eggs brownish, operculate, most with anopercular thickening or knob, somewhat collapsed, rounded anteriorly, tapering to point posteriorly, 27–28 by 10–13.

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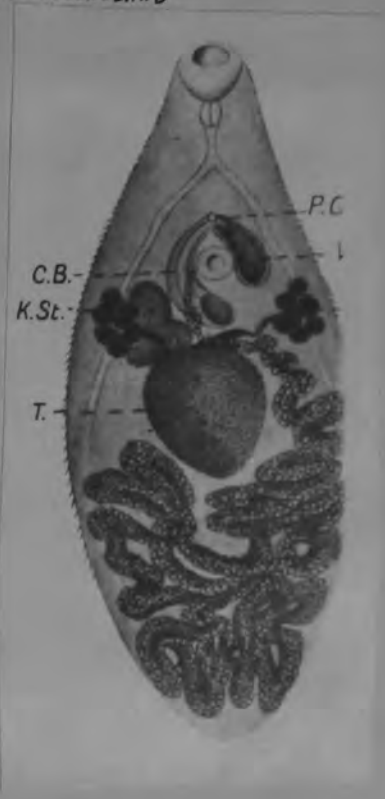
Discussion

Our species keyed to the genus *Paraproctotrema* Yamaguti 1934 in the keys given by Yamaguti (1971). The only species listed by the latter is *P. fusiforme* Yamaguti 1934 from a perciform (Pomadasyidae) fish from Japan. The latter species differs from ours in being much larger, in lacking a preacetabular body fold and a completely spined acetabulum, and in having a relatively longer esophagus, the ovary pretesticular, bristlelike spines in both the cirrus and terminal organ, shorter eggs (21), and the uterus entering the terminal organ near its proximal end.

Genolopa trifolifer ~~n. sp.~~ NICOLL, 1915

(Plate IV, fig. 4.)

NORTH QUEENSLAND



Several specimens of this interesting parasite were obtained from the intestine and coeca of a grunter (*Pomadasis hasta*). A single specimen also occurred in the swim-bladder. It is a small species measuring 1·5–2·1 mm. in length. The general outline is oval with pointed ends. The greatest breadth, which occurs a little behind the middle of the body, is 0·3–0·7 mm. Not infrequently the body is of fairly uniform breadth throughout with the anterior end somewhat pointed. The cuticle is thickly beset with stout spines, which cover the whole body to within a short distance of the tail.

The oral sucker is almost terminal and measures 0·18 mm. In one specimen it was found retracted within the body almost to the level of the ventral sucker. The inconspicuous ventral sucker is situated a third of the body length from the anterior end and measures 0·10 × 0·13 mm., being somewhat transversely oval.

The prepharynx is almost absent. The small globular pharynx has a diameter of 0·07 mm.; the oesophagus is slightly longer (0·1 mm.). The intestinal diverticula are narrow and extend to within a short distance of the tip of the tail. The genital aperture is median and a little in front of the ventral sucker. The comparatively large cirrus-pouch bends round the right border of the ventral sucker and extends about 0·1 mm. behind it. Its total length is over 0·4 mm. and its greatest width about 0·15 mm. It contains a small ovoid vesicula seminalis, a long pars prostatica and a short wide cirrus. No spines could be detected on the cirrus, but from analogy with other species of this group it is probable they are present.

There is a large vaginal sac, with thick walls, extending from the genital aperture, on the left side of the ventral sucker. It measures 0·25 × 0·13 mm. The uterus opens into this sac laterally on its inner side and somewhat in front of its middle. This arrangement resembles that in *Monorchis monorchis* but in that species the uterus opens into the sac behind its mid point. No spines could be seen in any part of the sac.

Alongside the outer border of the posterior part of the cirrus-pouch lies the ovary, which is decidedly trilobate in outline. Its greatest length is 0·25 mm.

Immediately behind the ovary, but lying almost in the middle of the body, is the large single testis. It is broadly ovo-cordate in outline and measures 0·38 × 0·36 mm. It is not overlapped by the uterus. The post-testicular space measures 0·8 mm.

Laterally on the level of the ovary lie the yolk glands, each of which consists of 8–10 large follicles, bunched together. The yolk gland on the right side overlaps the outer margin of the ovary to a considerable extent. The diameter of the follicles is about 0·07 mm. From each yolk gland issues a conspicuous duct which runs along the anterior border of the testis. There is no receptaculum seminis.

The uterus is very voluminous and fills the whole of the post-testicular space. It is highly convoluted, the convolutions being mostly transverse and densely packed together. The terminal part of the uterus runs up on the left side of the testis to enter the vaginal sac. The ova are thin-shelled and of small size, measuring only 0·018–0·026 × 0·012–0·013 mm. The size of the eggs is fairly constant in each specimen, but varies considerably in different specimens. In some they are more sharply pointed than in others.

Martin = Pritchard (1960) said that of no spines on any of terminal ducts this was a character.

Nicoll (1915) pair-Type specimen and mentioned presence of spines - typical [illegible]

This species is obviously a member of the family MONORCHIIDAE and it appears to be most closely related to the genus *Genolopa* Linton (1910), and to the type species *G. ampullacea* Linton. The latter is a much smaller form but the one outstanding difference in the internal anatomy lies in the shape of the ovary, which in *G. ampullacea* is roughly triangular. In the latter species, moreover, a receptaculum seminis is stated to be present, while well-marked spines occur on the cirrus, though not in the vaginal sac.

Ex. Pomadasys hasta (Bloch)
Pomadasyidae
Bombay, Arabian Sea
From: Hafeezullah, 1971


GENOLOPA

Monorchiidae

Huridostomum formionis ~~gen. et sp. nov.~~

Рис. 14 Mamaev, 1970

Хозяин: *Formio niger*.

Локализация: кишечник.

Место и время обнаружения. Тонкинский залив, август-сентябрь 1960, май-июнь 1961 г.

Частота встречаемости: у 11 рыб из 65 исследованных (9,1%), при интенсивности инвазии от 1 до 10 экз.

Строение. Мелкая трематода длиной 1,86 *мм*, максимальной шириной 0,31 *мм* на уровне переднего края брюшной присоски. Кутикула тела имеет тонкую поперечную исчерченность. Ротовая присоска крупная, бокаловидная, 0,20×0,17 *мм*, расположена терминально, но ротовое отверстие продолжается субвентрально в виде узкой щели. По переднему краю присоски в два ряда расположены короткие «щетинки» в количестве около 40. Длина самых крупных «щетинок» 0,016 *мм*. При большом увеличении микроскопа обнаруживается, что они имеют вид лодочек, направленных вогнутой стороной к переднему концу тела. Фаринкс овальный, длиной 0,11 *мм*, шириной 0,06 *мм*. Имеется короткий префаринкс и пищевод длиной 0,14 *мм*, перед брюшной присоской он разделяется на две ветви кишечника, которые тянутся до заднего конца тела. Брюшная присоска круглая, 0,16 *мм* в диаметре, расположена в конце передней трети тела. Расстояние между центрами присосок равно 0,50 *мм*.

Продольно вытянутый семенник находится в заднем конце тела, его размер 0,42×0,09 *мм*. Бурса цирруса очень крупная, длиной 0,92 *мм*, шириной 0,14 *мм*, содержит большой овальный семенной пузырек, размером 0,50×0,14 *мм*, занимающий ее заднюю часть и покрытый шипами циррус. Простатическая часть отсутствует. Шипы цирруса короткие, слегка изогнутые, с расширенным дисковидным основанием. Орган Лоосса представляет собой простой длинный мешок, покрытый изнутри такими же шипами, как и циррус. Матка впадает в среднюю часть органа Лоосса. Половой атриум очень короткий. Половое отверстие расположено позади бифуркации кишечника перед брюшной присоской.

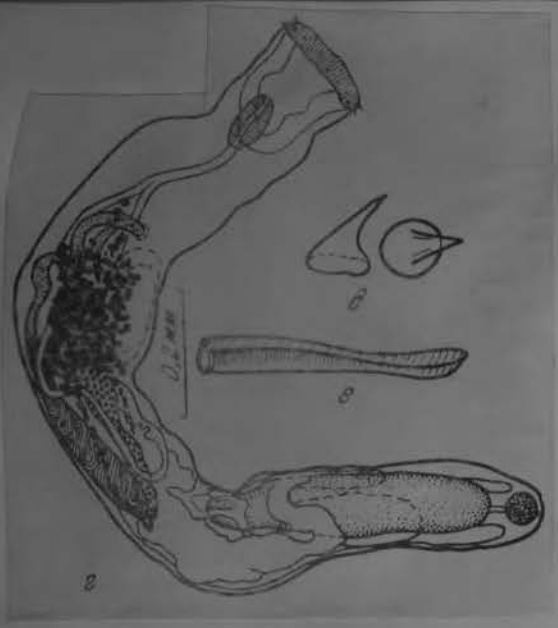
Яичник неправильной формы, продольно-вытянутый, 0,19×0,04 *мм*, расположен в начале второй половины тела у заднего конца бурсы цирруса. Желточники, состоящие из двух групп фолликулов, расположены на уровне брюшной присоски, от них отходят два длинных желточных протока, которые идут назад и впадают в желточный резервуар у заднего конца яичника. Семяприемник не обнаружен. Петли матки заходят назад до заднего края семенника. Яйца мелкие, 0,090—0,100×0,014—0,015 *мм*, имеют довольно толстую оболочку желтоватого цвета. Экскреторный пузырь трубчатый, короткий, имеет характерный круглый сфинктер, состоящий из округлых клеток.

Изменчивость признаков. Длина тела исследованных трематод колеблется довольно значительно: от 1,1 до 4,3 *мм*, максимальная ширина 0,23—0,40 *мм*. Наибольшая ширина тела обычно наблюдается на уровне брюшной присоски, иногда несколько позади нее. Размеры ротовой присоски 0,17—0,30×0,14—0,22 *мм*, фаринкса — 0,10—0,16×0,06—0,14 *мм*, брюшная присоска диаметром 0,14—0,24 *мм*. Концы кишечных ветвей всегда выходят за семенник и достигают уровня расположения сфинктера экскреторного пузыря, петли матки никогда не выходят назад за семенник. Циррус очень длинный, в вывернутом состоянии он может достигать половины длины тела.

Систематическое положение. Описанный вид трематод по расположению полового отверстия впереди присоски, по строению яиц, характеру расположения желточников и ряду других признаков должен быть отнесен к подсемейству *Monorchinae*. Из всех родов этого подсемейства наиболее близок он к роду *Lasiotocus*, но отличается от него наличием «щетинок» на ротовой присоске, отсутствием простатической части в бурсе цирруса, простым мешковидным органом Лоосса и другими деталями строения. От других родов он отличается еще больше. Считаем необходимым обосновать для описанного вида новый род, которому даем следующий диагноз.

Диагноз рода *Huridostomum* gen. nov. *Monorchidae. Monorchinae*. Мелкие трематоды с удлиненным телом. Ротовая присоска бока-

~over~



овидная, с двумя рядами мелких «щетинок» по переднему краю. Пре-
фаринкс очень короткий, пищевод довольно длинный, фаринкс
ачительно меньше ротовой присоски. Брюшная присоска кру-
ая, приблизительно таких же размеров, как и ротовая. Кишечные
тви доходят до заднего конца тела. Семенник удлиненный, в заднем
рице тела. Половая бурса длинная, содержит крупный овальный семен-
й пузырек и длинный циррус, вооруженный короткими шипами с дис-
видным основанием; простатическая часть отсутствует. Яичник про-
льно-вытянутый, находится впереди семенника, отделен от него
глями матки. Семеприемник не найден. Орган Лоосса длинный, меш-
видный, не разделен на две части, покрыт изнутри такими же шипами,
к и циррус. Матка впадает в среднюю часть органа Лоосса. Половой
риум короткий. Половое отверстие перед брюшной присоской. Жел-
ники в виде двух групп фолликулов на уровне брюшной присоски.
кскреторный пузырь трубчатый, короткий, имеет округлый сфинктер.

Типичный вид: *Huridostomum formionis* sp. nov.

HURIDOSTOMUM

Hurleytrematinae n. subfam.

Subfamily diagnosis. — Monorchiidae: Body narrow, spinose. Acetabulum small, in anterior half of body. Ceca reaching posterior extremity. Testes single, in posterior half of body. Cirrus pouch elongate. Genital pore beside acetabulum. Ovary immediately pretesticular. No receptaculum seminis. Vitellaria divided by testis into an anterior and a posterior group. Uterus occupying whole intercecal field of hindbody; metraterm swollen, spined; eggs filamented. Excretory vesicle Y-shaped.

Hurleytrema Srivastava, 1938

Generic diagnosis. — Monorchiidae, Hurleytrematinae: Body medium-sized, narrow, spinose. Oral sucker subterminal, prepharynx present, pharynx small, esophagus of moderate length, ceca terminating at posterior extremity. Acetabulum smaller than oral sucker, at junction of anterior and middle third of body. Testis situated toward middle of posterior half of body. Cirrus pouch elongate, enclosing oblong seminal vesicle, prostatic complex and armed cirrus. Genital pore immediately to left of acetabulum. Ovary trilobate, immediately pretesticular. Receptaculum seminis absent. Laurer's canal present. Vitelline follicles lateral, extending from level of acetabulum to near posterior extremity. Uterus occupying whole of intercecal field of hindbody; metraterm well developed, lined with minute spines; eggs roughly triangular, with filament at antiopercular pole. Excretory vesicle Y-shaped, bifurcating just behind testis. Intestinal parasites of marine fishes.

Genotype: *H. ovocaudatum* Srivastava, 1938 (Pl. 34, Fig. 441), in *Teuthis margaritifera*; Arabian Sea.

Genus *Haleytrema* Srivastava, 1939

Monorchiinae : Body elongated, narrow, medium sized. Oral sucker subterminal. Acetabulum smaller than oral sucker, at junction of anterior and middle thirds of body. Testis single, median, in middle of posterior half of body. Cirrus sac elongate, claviform, extending much behind acetabulum, enclosing elongated vesicula seminalis, prostatic complex and armed cirrus. Genital pore immediately to left of acetabulum. Ovary trilobed, immediately pretesticular. Receptaculum seminis absent. Laurer's canal present. Vitelline follicles lateral, extending from acetabular level to near posterior extremity. Uterus much coiled, occupying almost whole intercaecal region behind acetabulum. Metraterm well developed, lined with minute spines. Eggs roughly triangular with filament at antiopercular pole. Excretory vesicle Y-shaped. Parasitic in intestine of marine fishes.

Genotype : *H. ovocandatum* Srivastava, 1939 in *Teuthis margaritifera* Arabian Sea

FROM H. R. MEHRA (1966)

Monorchidae

HURLEYTREMA Srivastava,1939

Body medium-sized,narrow,spinose. Oral sucker larger than acetabulum which is situated at the junction of the first and middle third of body length. Prepharynx ##, pharynx and esophagus present; ceca narrow, reaching the hind end. Testis single,compact,just behind middle third of body length. Cirrus sac well-developed, elongated, extending from genital atrium to last third of middle third of body length; it encloses an oval seminal vesicle, pars prostatica with prostate glands and an armed cirrus. Genital atrium close to acetabulum. Ovary trilobed, pretesticular. Seminal receptacle absent, Laurer's canal present. Vitellaria follicular, lateral, extending from level of acetabulum to a little in front of hind end. Uterus occupies the whole of the space between metraterm and blind ends of ceca. Eggs roughly triangular, with a polar filament at the aoperculate end; metraterm well-developed. Excretory bladder narrow and tubular and bifurcates just behind testis. Parasites of marine fishes.

Type species: H.ovocaudatum Srivastava,1939

Reference: Indian Jour.Vet.Sci.,9:233-236.

Hurleytrema ovocaudatum

Size 3. by 0.42; oral sucker 0.11 by 0.13; acetabulum 0.076 to 0.08, 1/3 from anterior end. Prepharynx 0.12; pharynx 0.09 by 0.012; esophagus fairly long.

Cirrus sac 0.6 by 0.1, cirrus spined. Genital atrium at left anterior border of acetabulum. Ovary 3-lobed. Vitellaria from level of acetabulum to near posterior end. Metraterm 0.3 by 0.1, Eggs (without filament) 29 to 30 by 11 to 15 µ. Host: Teuthis margaritifera Cuv. & Val. Locality: Arabian Sea.

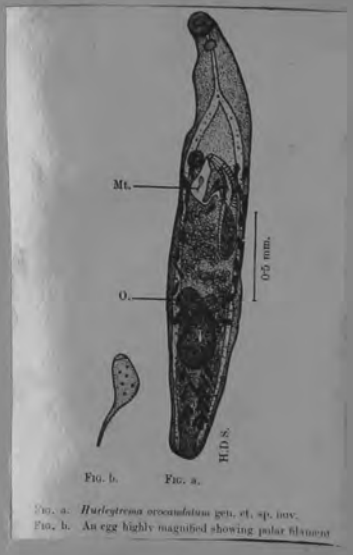


Fig. b. Fig. a.

Fig. a. *Hurleytrema orecaudatum* gen. et. sp. nov.
Fig. b. An egg highly magnified showing polar filament

Genus—*Hurleytrema* Gen. nov.

Hurleytrema ovocaudatum Gen. et. sp., nov.

Host—*Teuthis margaritifera* Cuv. and Val. Srivastava, H.D., 1939

Habitat—Intestine.

Locality——Karachi, Arabian Sea.

It is a very rare parasite occurring in the intestine of *Teuthis maragaritifera* found in the Arabian Sea. The parasite is light brown in colour and possesses considerable power of contraction and expansion. It has an elongated, narrow, spinose body which in the type specimen measures 3·0 in length and 0·42 in maximum breadth. The oral sucker is of 0·11 × 0·13 size and is slightly subterminal. It opens posteriorly into a narrow, 0·12 long, prepharnyx which is followed by a small pharnyx of 0·09 × 0·012 size. The oesophagus is fairly long and narrow and bifurcates into two long, slender, straight caeca, which end blindly at the hinder end. The acetabulum has a diameter of 0·076—0·08 and is situated slightly to the left of the median line at the end of the first third of the body length. The size ratio between the oral sucker and the acetabulum is as 3 : 2.

The single, pear-shaped, median testis is of 0·34 × 0·22 size. It is situated in the intercaecal space just behind the middle third of the body length. The cirrus sac is club-shaped. It measures 0·6 × 0·1 in size and extends from the genital atrium to the last third of the middle third of the body length. It encloses an elongated, oval vesicula seminalis, 0·3 × 0·08, a tubular pars prostatica, 0·2 × 0·03, and a 0·04 long, armed cirrus. The genital atrium lies close to the left of the anterior margin of the acetabulum.

The ovary, 0·12 × 0·22 in size, consists of three ovoid lobes, all joined together in the median line. It is situated close in front of the testis. The receptaculum seminis is absent. A small Laurer's canal is given off from the oviduct just before the latter enters the shell gland complex, lying in front of the ovary. The vitellaria consist of elongated, pear-shaped, small follicles extending laterally from the level of the acetabulum to the last fifteenth part, of the body length. The uterus is well developed and occupies the whole of the intercaecal space between the metraterm and the blind ends of the caeca. Anteriorly it continues into a well-developed metraterm of 0·3 × 0·1 size, which is armed internally with minute spines. The eggs are operculate and roughly triangular in shape and possess a polar filament at the aopercular end. They measure 0·019—0·03 × 0·011—0·015 in size, excluding the filament of 0·015—0·025 length.

The excretory bladder is Y-shaped.

The new genus *Hurleytrema* though definitely a representative of the sub-family Proctotreminae Odhner 1911, differs remarkably from all the genera of the sub-family in the extent of vitellaria, which extend from the level of the acetabulum to almost the hinder end, and in the presence of a polar filament in the egg. In its latter character the new genus differs from the genera of the sub-family Monorchiinae also. The new genus is named in honour of Mr. T. J. Hurley, M.R.C.V.S., D.V.S.M., I.V.S., to whom the author is deeply indebted for his much kind encouragement.

HURLEYTREMA

Syn.: *Pseudohurleytrema* Yamaguti, 1954

Generic diagnosis. — Monorchiidae, Lasiotocinae: Body very small, elongate, spinose, with eye spots. Oral sucker subterminal, prepharynx short, pharynx small, esophagus moderately long. Ceca half-long, reaching slightly beyond midbody. Acetabulum nearly as large as oral sucker, one third to one half of body length from anterior extremity. Testis posterior to ends of ceca. Cirrus pouch large, elongate, containing oval or spherical seminal vesicle, prostatic complex and armed cirrus. Genital pore median, immediately anterior to acetabulum. Ovary median, directly pretesticular. Vitelline follicles covering ceca between cirrus pouch and ovary. Uterus reaching to near posterior extremity; metraterm well developed, with vesicular basal swelling which is followed by another spinose swelling. Eggs with polar filaments. Excretory vesicle consisting of saccular stem and two narrow crura. Intestinal parasites of marine fishes.

Genotype: *P. eucinostomi* (Manter, 1942) Yamaguti, 1954 (Pl. 35, Fig. 453), syn. *Hurleytrema e.* M., in *Eucinostomus lefroyi;* Florida.

~~Pseudoh~~ *Huxleytrema eucinostomi* ~~n. sp.~~ Manter, 1942 ~~Hyman, 1951~~

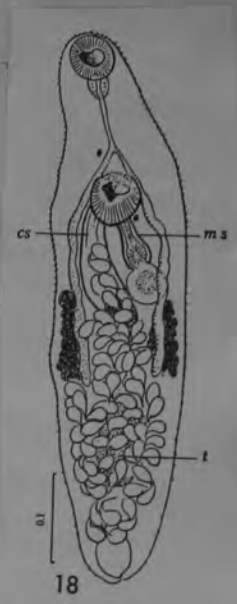
(Figs. 18–21)

Host: Eucinostomus lefroyi (Goode); in two of 12.

Location: Intestine.

Diagnosis (based on four specimens): Body elongate, 0.378 to 0.613 mm. by 0.126 by 0.150 mm. A specimen 0.338 in length contained no eggs. Body armed with long, narrow, pointed spines. Eye spots present; one more or less posterior to the other; posterior to pharynx and nearer acetabulum than to the oral sucker in mature specimens but about midway between suckers in an immature specimen. Oral sucker 0.044 to 0.050 mm. in diameter. Acetabulum one-third to one-half body length from anterior end 0.042 to 0.054 mm. in diameter. Short prepharynx; pharynx 0.025 to 0.027 mm. by 0.022 to 0.025 mm.; long esophagus forking just anterior to acetabulum; ceca reaching slightly beyond midbody. Genital pore median, directly anterior to acetabulum. Single testis, large, median, posterior to ends of ceca, ovoid, partly concealed by eggs in uterus. Cirrus sac large, 0.110 to 0.170 mm. by 0.039 to 0.042 mm.; containing an ovoid or spherical seminal vesicle, pars prostatica with large colorless cells, and cirrus armed with a few spines near its tip. The cirrus and metraterm open into a spherical unspined atrium nearly as large as acetabulum. Ovary very indistinct, median, directly pretesticular. Vitellaria consisting of two lateral masses covering the ceca some distance posterior to acetabulum, extending from posterior end of cirrus sac to level of the testis; follicles more or less fused on each side. Uterus extends to near posterior end of body then forward to the metraterm. Metraterm sac (Fig. 20) club-shaped or flask-shaped, slightly shorter than cirrus sac but of about equal width at its base which is swollen by the large spherical metraterm vesicle. A second and smaller swelling is armed with spines as is the metraterm proper. Eggs (Fig. 21) are relatively large, 26 to 28 by 20μ, brown, thick-shelled with single, rather heavy, polar filaments about 34μ in length. The excretory vesicle consists of a median sac-like stem and two fairly narrow crura which extend forward to the level of the vitellaria.

Comparisons: This species is very different from *H. chaetodoni* in size, shape of egg, length of ceca, and shape of metraterm sac. It differs from *H. ovocaudatum* in its much smaller size, more limited extent of the vitellaria, sucker ratio, and shape of metraterm sac.



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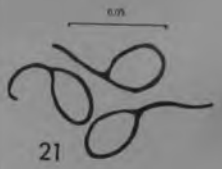

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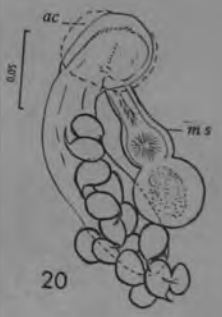

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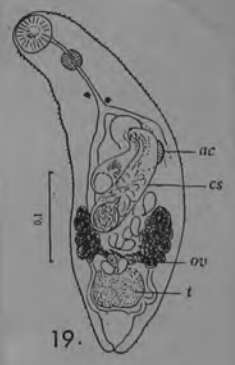
Tortugas, Fla.



19.

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-OVER-

Pseudohurleytrema eucinostomi (Manter, 1942) Yamaguti, 1953
(FIGURE 38)

Synonym:
Hurleytrema eucinostomi Manter, 1942.
Host: **Gerres cinereus*.
Site: intestine.
Localities: Punta Arenas, Boqueron Bay and Cabo Rojo, P. R.
Deposited specimen: No. 39330.

from Siddiqi + Cable, 1960

Pseudohurleytrema eucinostomi (Manter, 1942) Yamaguti, 1954

Synonym: Hurleytrema eucinostomi Manter, 1942.

Hosts: **Eucinostomus pseudogula* (J); *Gerres cinereus* (C). JAMAICA, CURAÇAO

Site: intestine.

Our specimens differ from Manter's only in having somewhat smaller eggs (22-26 by 12-16 μ compared with 26-28 by 20). Siddiqi and Cable (1960) reported the same species from Puerto Rico; in their specimens, eggs measured 27-30 by 11-15 μ (unpublished data).

FROM NAHHAS AND CABLE (1964)

Hurleytrema eucinostomi
Manter, 1942

Pseudohurleytrema eucinostomi (Manter, 1942) Yamaguti, 1954.

Host: Eucinostomus gula (3 of 3).
Site: Rectum.

Discussion: Eight mature specimens differ slightly from the original description. The eyespots are more anteriorly located than originally described and the caeca may extend almost to the midtesticular level. The ovary is usually distinct and dextral. The testis is elongate, with the width 40 to 80% the length. The specimens are 0.52 to 1.24 long, with an immature specimen 0.50 long. Sucker ratios are 1:0.8 to 1.0, usually 1:0.98. The eggs measure 18 to 27 by 14 to 17 microns. Nahhas and Cable (1964:204) gave measurements of specimens from Jamaica, Curaçao, and Puerto Rico.

From: Overstreet, 1969

Hurleytrema longitestis n. sp. Bravo, 1956
(Figs. 12 y 13)

Huésped. *Citula dorsalis* (Gill), "pámpano de hebra", "papelillo", y *Selene brevoorti* (Gill.) "pámpano", "luna".

Localización. Intestino.

Localidad. Mazatlán, Sinaloa.

Número de ejemplares colectados: 12 en dos huéspedes.

Descripción. Medidas sobre cuatro. Cuerpo alargado, espinado, 0.68 a 1.21 de largo por 0.26 a 0.32 de ancho a nivel del ovario. Ventosa oral 0.047 a 0.069 de largo por 0.047 a 0.067 de ancho, con la abertura oral subterminal. Acetábulo poco visible, anterior al segundo tercio del cuerpo, posterior al metratermo, sobre la línea media o hacia el lado izquierdo, 0.067 a 0.091 de largo por 0.07 a 0.094 de ancho. Relación de las ventosas 1:1.6 a 1:1.7. Prefaringe corta: faringe subgloboide, 0.016 a 0.034 de largo por 0.026 a 0.039 de ancho; esófago largo y muy delgado, 0.109 a 0.186 de largo por 0.06 a 0.012 de ancho; bifurcación intestinal anterior al poro genital; ciegos inconspicuos, no fué posible distinguir su terminación. Poro genital ligeramente anterior a la parte media entre la bifurcación intestinal y el acetábulo al lado izquierdo. Testículo muy largo ocupando la mitad posterior del cuerpo, sobrepasando el lado derecho del ovario en su mitad posterior, llega hasta cerca del extremo posterior pero sin sobrepasar las asas uterinas posteriores. Saco del cirro de paredes gruesas, 0.172 a 0.179 de largo por 0.058 a 0.094 de ancho, alcanza y sobrepasa al ovario; porción anterior curvada; contiene una vesícula seminal ovoide o esférica; la prostata, con numerosas células glandulares, está separada de la vesícula seminal por una ligera constricción; el cirro, armado con espinas cerca de su extremo libre, desemboca en un amplio atrio genital armado de pequeñas espinas, esférico y tan grande como el acetábulo.

Vitelógenas de cerca de 20 folículos sobre cada lado, más o menos fusionados, teniendo algunos el aspecto de cordones ramificados; ocupan la zona ovárica y mitad de la zona testicular; abarcando todo lo ancho del cuerpo. El útero se extiende posterior al testículo en vueltas longitudinales espiraladas hasta la parte media del cuerpo, se continúa por asas cortas transversales al lado derecho del ovario, y sube diagonalmente para desembocar en el metratermo, armado en su mitad anterior de cortas espinas; es claviforme, como de ¾ de la longitud del saco del cirro, y envuelto en su exterior por células glandulares. Huevos 0.023 a 0.031 de largo por 0.014 a 0.021 de ancho, cubiertos por una cáscara gruesa café-amarillenta; están provistos de un filamento en el polo posterior de 0.037 a 0.047 de largo. Poro excretor terminal. No se vió la vesícula excretora.

Discusión. Estos ejemplares son similares a *Hurleytrema chaetodoni* Manter, 1942, y a *Diplolasiotocus chaetodontis* Yamaguti, 1952. *H. chaetodoni* difiere en la estructura del saco del cirro, en la longitud del testículo y en que los huevos son de mayor tamaño, 0.04 de largo por 0.014 a 0.017 de ancho con un filamento muy largo. *Diplolasiotocus chaetodontis* difiere fundamentalmente en la presencia de dos testículos.

El nombre específico se refiere a la extremada longitud del testículo.

Hurleytrema malabonensis (Velasquez, 1961) Overstreet, 1969

Syn. Pseudohurleytrema malabonensis (Velasquez, 1961) Nahhas & Powell, 1965

MONORCHIIDAE Odhner, 1911

543. *Hurleytrematoides malabonensis* n. sp. (Figs. 7, 8 and 9) Velasquez 1961

Host: *Parachaetodon ocellatus* (Cuvier and Valenciennes).

Location: Intestine.

Locality: Malabon, Rizal, Luzon Island, Philippines (bought from Central Market, Manila, Philippines).

Prevalence: 11 from 3 hosts.

Type and paratypes: U.S. Natl. Mus. Helm. Coll. No. 39475. University of the Philippines, Dept. of Zoology, Helm. Coll. Nos. 541f; 542f, and 570(1)f.

Diagnosis: (Based on 6 fairly extended gravid specimens). Body fragile, elongate, minutely spined, 0.58 to 1.01 long, 0.16 to 0.25 wide. Oral sucker 0.06 to 0.09 in diameter. Acetabulum at about one-third of body length from anterior end, 0.05 to 0.09 in diameter (in 5 specimens); usually midventral, at times (in type) pushed to right side of body. Prepharynx 0.012 to 0.023 (in 2 specimens), in others not discernible. Pharynx 0.04 to 0.058 long, 0.028 to 0.06 wide. Esophagus 0.07 to 0.12 long. Ceca extending to posterior extremity. Genital pore covered with eggs in very gravid worms. In 2 specimens genital pore at level of acetabulum directed towards lateral side. Feebly developed glandular cells at forebody.

Testis subglobular, 0.16 to 0.23 by 0.092 to 0.16 (in 2 specimens), hardly discernible, Ovary subglobular, faintly stained, 0.056 in diameter in one specimen. Metraterm (in 2 specimens) 0.12 to 0.16 long, 0.023 wide; spination at aperture discernible (fig. 9). Cirrus sac (fig. 9) 0.07 long, 0.023 wide (in 2 specimens); spination of cirrus not seen. Uterus extending to posterior extremity, partly covering testis and ovary in type; in others covering sex organs completely. Vitellaria follicular, irregularly shaped masses in midbody displaced to left, immediately preovarian, confluent medially, dorsal to uterus. Eggs, pear-shaped, operculated, 35 to 46 by 16 to 21 microns, each with an unusually long polar filament about 7 to 8 times length of egg (fig. 8). Excretory bladder saccular; arising from it are 2 broad arms, extent anteriorly not traced.

On the basis of Yamaguti's (1953) key to *Hurleytrema* and allied genera of Monorchiidae, I have assigned the present species to the genus *Hurleytrematoides*.

H. malabonensis is the second species in the genus. It is distinctly different from *Hurleytrematodies chaetodoni* (Manter, 1942) Yamaguti, 1953, in the character of the vitellaria and the extremely long filament of the egg.

From Overstreet, 1969

Hurleytrema **pyriforme** sp. n.
Figure 33

Host: *Trachinotus falcatus* (1 of 6), type host.
Site: Pyloric caeca.

Holotype: U. S. N. M. Helm. Coll. No. 71315, paratype: No. 71375.

Description (based on 5 apparently recently matured specimens): Body pyriform, 0.52 to 0.63 long by 0.28 to 0.33 wide; widest at gonadal level. Cuticle completely spinose. Eyespots at pharyngeal-esophageal level. Oral sucker 0.05 to 0.07 long by 0.07 to 0.08 wide. Acetabulum weakly developed, 0.04 to 0.05 by 0.05 to 0.06. Sucker ratio 1:0.8; 1:0.6 to 0.7 in 6 additional specimens without eggs. Forebody 40 to 48% of body length. Prepharynx 0.01 long. Pharynx 0.04 long by 0.03 to 0.04 wide. Esophagus 0.05 to 0.07 long. Intestinal bifurcation about midway between suckers. Caeca extending almost to or slightly past testis.

Testis single, 0.07 to 0.10 long by 0.15 to 0.18 wide, sinistral, slightly irregular, 0.08 to 0.12 from acetabulum. Cirrus sac large, arcuate, over 0.20 long, extending to testicular level; containing oval seminal vesicle, saccate cells opening into pars prostatica, numerous prostatic cells, cirrus with spines 6 to 11 microns long. Cirrus ½ or more the length of cirrus sac. Genital atrium unarmed. Genital pore immediately anterior to acetabulum, median to slightly sinistral.

Ovary small, longer than wide, swollen at connection with oviduct, dextral and slightly anterior to testis. Seminal receptacle absent; proximal folds of uterus containing sperm. Uterus extending to a level posterior to testis, entering terminal organ near junction of its spiny and unarmed portions. Terminal organ over ¾ as long as cirrus sac; distal portion tubular, heavily spined, anterior portion and sometimes almost all of proximal chamber with spines 5 to 12 microns long with sharp points and wide bases, as spines of cirrus. Vitelline follicles in 2 lateral clusters, between or overlapping acetabulum and testis; may or may not overlap caeca. Vitelline ducts large. Newly-formed eggs 14 to 21 by 11 to 12 microns with filament 2 to 4 times the length of the eggshell.

Excretory vesicle saccate, not reaching testis; collecting ducts sometimes swollen, extending, at least, to vitelline region. Excretory pore terminal to slightly ventral.

Discussion: *Hurleytrema pyriforme* resembles *H. trachinoti* Thomas, 1959, which is found in the same genus of host. It differs from *H. trachinoti* in that the oral sucker is more spherical than funnel-shaped; the oral sucker, acetabulum, and pharynx are half as large; the excretory vesicle does not extend to the testis; and the distance between the acetabulum and testis is greater. Also, the cirrus sac in *H. pyriforme* is larger and contains a unipartite seminal vesicle, the spines in the terminal organ are situated farther posteriorly, and the vitellaria are more compact.

Nahhas and Powell (1965:19) erected the genus *Parahurleytrema* with *P. trachinoti* as type species, characterized by a bipartite seminal vesicle and the uterus entering the terminal organ near the junction of the spiny anterior and unarmed posterior portions. Since the present species, with a unipartite seminal vesicle, shows such a close relationship to *H. trachinoti* and the illustration of the seminal vesicle of *H. trachinoti* by Thomas (1959:106) reveals a rather indistinct bipartite condition, I place *Parahurleytrema* as a synonym of *Hurleytrema*; *P. coronatum* (Manter and Pritchard, 1961) is therefore *Hurleytrematoides coronatum*, as originally described.

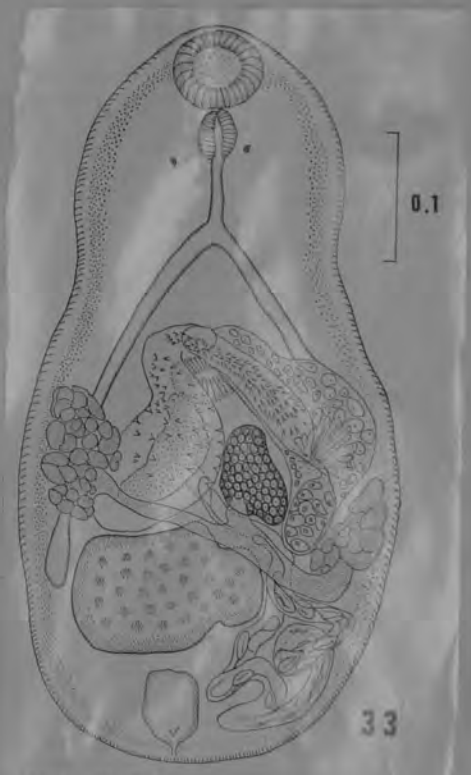


Figure 33. *Hurleytrema pyriforme*, holotype, dorsal view.

~~Pseudo~~H~~urleytrema~~ shorti Nahhas & Powell,1965

***Pseudohurleytrema shorti* sp. n.**

(Fig. 6)

Host. Selene vomer (L.); fam. Carangidae; in of one.

Intestine.

Type specimen. USNM Helm. Coll. No. 60094.

Synopsis (based on 15 specimens, measurements on 11 mature ones)

Body elongate, tapering at both ends, 0.644 to 2 mm long, 0.168 to 0.241 mm wide. Entire cuticle spinose. Eyespot pigment absent. Oral sucker 42 to 51 in diameter; ventral sucker pretorial, 43 to 53 in diameter; sucker ratio 1:1 pharynx one to two times length of pharynx 28 to 33 long, 22 to 26 wide; esophagus to six times length of pharynx; ceca extending near posterior limits of vitellaria. Testis longer wide, in posterior fourth of body; cirrus sac 144 to 180 long, 60 to 77 wide, containing ovoid seminal vesicle, long pars prostatica, and cirrus with triangular spines 5 to 7 long. Terminal organ smaller than cirrus sac, consisting of posterior unarmed vesicle and anterior spiny part; metraterm spines similar to but slightly smaller than those of cirrus. Ovary triangular or indistinctly lobed, pretesticular; uterus chiefly postovarian, joining terminal organ near anterior spiny portion. Vitelline follicles in two lateral groups, extending from level of anterior margin of acetabulum to near level of posterior limit of ovary. Genital atrium unarmed. Eggs thick-shelled, 23 to 26 by 15 to 18, exclusive of filament; filament unipolar, 2 to 3 times length of egg. Excretory vesicle saclike, anterior extent not determined; pore terminal.

This species is named in honor of Professor R. B. Short of Florida State University.

Pseudohurleytrema shorti differs from *P. malabonensis* (Velasquez, 1961) in the distribution of the vitellaria and in having smaller eggs and shorter egg filaments and ceca; and from *P. cucinostomi* (Manter, 1942) chiefly in having more anterior vitellaria and in lacking eyespot pigment.

The absence of eyespot pigment in some species of monorchiids and its presence in other members of the same genus was first noted by Nahhas and Cable (1964) in the genus *Diplo-* [illegible] in which *D. hopkinsi* Nahhas and Cable, 1964 lacks eyespots whereas the other members of the genus have them. This situation also exists, but [illegible] in the genus *Hurleytrematoides* in which these pigmented spots characterize *H. coronatus* Nahhas and Cable, 1964 but not *H. chaetodoni* (Manter, 1942).

Gulf of Mexico

Hurleytrema shorti (Nahhas and Powell, 1965) comb. n. Overstreet, 1969

Pseudohurleytrema shorti Nahhas and Powell, 1965.

Pseudohurleytrema ottoi Travassos, Freitas, and Bührnheim, 1965 (new synonym).

Host: *Selene vomer* (2 of 2).

Site: Intestine, pyloric caeca, and stomach.

Discussion: My specimens are extremely gravid. The smallest specimen is 0.46 long. Measurements of the organs are slightly less than those of the original description. The acetabulum is weakly developed and the sucker ratio is 1:1.0 to 1.5. Eggs measure 24 to 30 by 13 to 16 microns, with filaments up to at least 3.5 times the length of the eggshell. The caeca may extend posterior to the vitellaria.

I agree with Manter and Pritchard (1961: 487) that *Pseudohurleytrema* Yamaguti, 1954, is a synonym of *Hurleytrema* Srivastava, 1939, and that *Hurleytrema* be temporarily distinguished from *Hurleytrematoides* Yamaguti, 1954, by including species with a unipartite rather than a biparrite seminal vesicle.

The genus *Hurleytrematoides* accordingly includes *H. chaetodoni* (Manter, 1942), *H. coronatum* Manter and Pritchard, 1961, and *H. curacaensis* Nahhas and Cable, 1964; and the genus *Hurleytrema* includes *H. ovocaudatum* Srivastava, 1939, *H. eucinostomi* Manter, 1942, *H. longitestis* Bravo-Hollis, 1956, *H. trachinoti* Thomas, 1959, *H. malabonensis* (Velasquez, 1961) comb. n., *H. shorti* (Nahhas and Powell, 1965) comb. n., and the new species described next. *Pseudohurleytrema ottoi* Travassos, Freitas, and Bührnheim, 1965, from *Selene vomer* in Brazil and *H. shorti* are the same species. The description of *H. shorti* appeared earlier in 1965 than did that of *P. ottoi*. This synonymy is also recognized by Freitas, Travassos, and Kohn (Freitas, 1968: personal communication).

Hurleytrema ottoi (Trav., Freitas, & Bührnheim, 1965) Monorchiidae

Pseudohurleytrema ottoi Travassos, Freitas & Bührnheim, 1965
(Est. 13, figs. 44-46)

Pseudohurleytrema ottoi Travassos, Freitas & Bührnheim, 1965: 73-75, fig. 1

Trematódeos pequenos, com cutícula espinhosa e extremidades atenuadas e arredondadas; medem 0,70 a 0,93 mm de comprimento por 0,21 a 0,30 mm de largura. Ventosa oral subterminal, com 0,040 a 0,047 mm de comprimento por 0,047 a 0,060 mm de largura. Acetábulo com 0,040 a 0,053 mm de comprimento por 0,040 a 0,052 mm de largura. Relação entre a ventosa oral e o acetábulo varia de 1:0,80 a 1:1,03. Pré-faringe presente, curta. Faringe musculosa, com 0,033 a 0,040 mm de comprimento por 0,020 a 0,023 mm de largura. Esôfago relativamente longo, com 0,106 a 0,133 mm de comprimento. Cecos intestinais terminando na metade anterior da zona testicular. Poro genital submediano, pós-bifurcal e pré-acetabular. Bôlsa do cirro bem desenvolvida, intercecal, estendendo-se da parte anterior da zona ovariana até o poro genital; mede 0,166 a 0,333 mm de comprimento por 0,073 a 0,113 mm de largura e encerra vesícula seminal mais ou menos ovóide, região prostática bem desenvolvida e cirro globoso e espinhoso na região distal. Testículo único, de contôrno liso e aproximadamente triangular; é pós-acetabular e quase todo pós-ovariano, invadindo parcialmente o campo do ovário; situa-se próximo à extremidade posterior dos cecos intestinais, sendo em grande parte pós-cecal; mede 0,140 a 0,220 mm de comprimento por 0,106 a 0,133 mm de largura. Ovário pós-acetabular, um pouco deslocado lateralmente, no campo da bôlsa do cirro e em parte no campo testicular, invadindo parcialmente as zonas dêsses dois órgãos; é intercecal e mede 0,073 a 0,107 mm de comprimento por 0,067 a 0,086 mm de largura. Glândula de Mehlis, espermateca e canal de Laurer não evidenciados. Útero formado alças sinuosas que ocupam a metade posterior do corpo, desde a zona pré-ovariana até a zona pós-testicular, invadindo a área das gônadas e as dos cecos. Vagina pouco diferenciada, ligando-se à porção distal do saco ou bôlsa vaginal, que mede 0,113 a 0,133 mm de comprimento por 0,060 a 0,080 mm de largura. Bôlsa vaginal não espinhosa, porém com delicada estriação longitudinal; é quase tôda pré-acetabular e na zona da bôlsa do cirro, que pode ultrapassar, um pouco, anteriormente; é intercecal, pode conter espermatozóides e comunica-se com uma porção mais ou menos globosa e espinhosa, que se abre no poro genital. Ovos amarelos, operculados e com filamento polar; medem 0,024 a 0,030 mm de comprimento por 0,019 a 0,024 mm de largura, sem o filamento; êste possui 0,052 a 0,060 mm de comprimento. Vitelinos constituídos por dois curtos grupos de folículos condensados, situados lateralmente; são intercecais, cecais e extracecais e estendem-se de pouco adiante da zona acetabular até o início da zona ovariana. Poro excretor terminal. Vesícula excretora não observada.

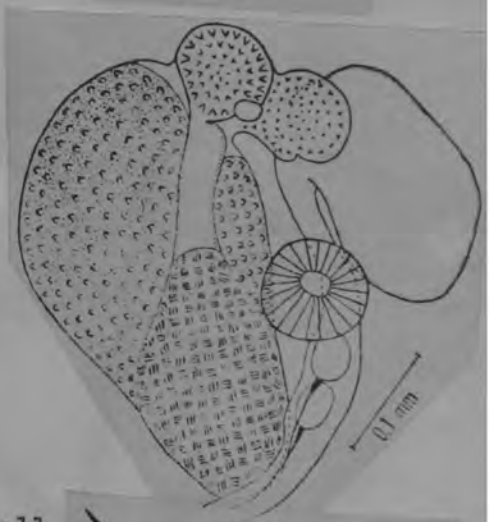
Habitat — Intestino de **Selene vomer** L.

Proveniência — Ilha N. S. da Conceição, baía de Vitória (Oceano Atlântico), Estado do Espírito Santo, Brasil.

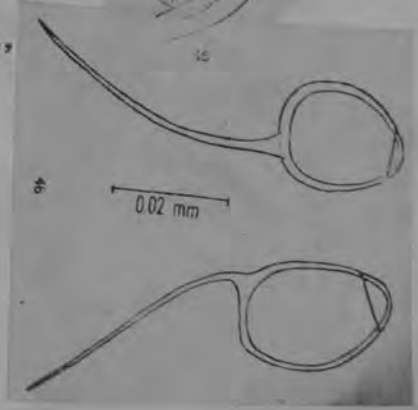
Material estudado depositado na Coleção Helmintológica do Instituto Oswaldo Cruz sob o número 29 948 (síntipos).

No Quadro V damos as principais medidas de alguns espécimes.

FROM TRAVASSOS, TEIXEIRA DE FREITAS AND BÜHRNHEIM, 1967



Synonym of Hurleytrema shorti (Nahhas & Powell, 1965) Overstreet, 1969



NATIONAL SUBJECT INDEX

HURLEYTREMA

Class Schedule

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Final Examinations

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Name _____ Telephone _____

Address _____

School _____ Class _____

Hurleytrematoides Yamaguti, 1954.

Generic diagnosis. — Monorchiidae, Postmonorcheidinae: Body small, elongate, spinose. Oral sucker subterminal, prepharynx short or lacking. Pharynx small, esophagus moderately long, ceca reaching to near posterior extremity. Acetabulum nearly as large as oral sucker, situated one fourth the body length from anterior extremity. Testis posterior to middle

of hindbody. Cirrus pouch elongate, enclosing bipartite seminal vesicle, prostatic complex and armed cirrus. Genital pore median, just anterior to acetabulum. Ovary subglobular to lobate, pretesticular. Vitelline follicles extending across body dorsal to uterus between cirrus pouch and ovary. Uterus descending to extreme posterior end, then ascending; metraterm well developed, spinose. Eggs with polar filament. Excretory vesicle? Intestinal parasites of marine fishes.

Genotype: *H. chaetodonis* (Manter, 1942) Yamaguti, 1954 (Pl. 33, Fig. 428), syn. *Hurleytrema c.* M., in *Chaetodon ocellatus* and *C. capistratus;* Florida.

Hurleytrematoides

~~Hurleytrema~~ chaetodoni (Manter, 1942) Yamaguti, 1954

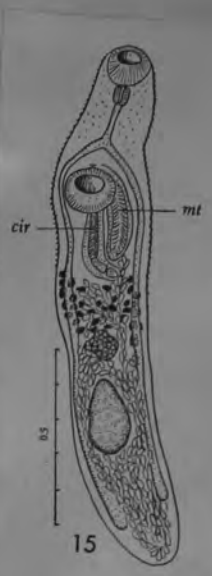
(Figs. 15–17)

Hosts: Chaetodon ocellatus Bloch, type host; in two of 13; *C. capistratus* Linn.; in one of two.

Location: Intestine.

Diagnosis: (based on seven specimens): Body elongate, armed with spines at least to midbody region; size 0.807 to 1.477 mm. by 0.164 by 0.255 mm., tapering slightly at each end, both ends rounded. Oral sucker 0.072 to 0.120 mm. in diameter, slightly wider than long. Acetabulum about one-fourth body length from anterior end, almost exactly the same size as oral sucker (0.068 to 0.130 mm. in diameter). Genital pore median, just anterior to acetabulum. Forebody glandular. Prepharynx very short or lacking; pharynx 0.032 to 0.070 mm. in length, slightly longer than wide; esophagus longer than pharynx; intestinal bifurcation somewhat nearer acetabulum than oral sucker; ceca extending to near the posterior end of body. Testis posterior to midbody, usually elongate but subglobular in one specimen. Cirrus sac slender, elongate, extending at least half the distance from acetabulum to ovary and sometimes almost reaching ovary. Its posterior half is bent or curved to one side. It contains a bipartite seminal vesicle in its basal third, and a long cirrus armed with long spines. Gland cells surround both seminal vesicle and cirrus. Ovary subglobular to slightly lobed (three or four indistinct lobes can usually be seen); median, pretesticular, immediately posterior to midbody. It may or may not be separated from the testis by coils of the uterus. Vitellaria of about 20 follicles of irregular shape, approximately in midbody region, immediately preovarian, forming a continuous band across the body dorsal to the uterus between ovary and posterior part of cirrus sac. Uterus extending to posterior end of body in longitudinal loops but not overlapping the testis appreciably. Metraterm sac about three-fourths length of cirrus sac and slightly wider, more or less parallel to the cirrus sac and to the left. The metraterm spines (Fig. 17) are similar to those in the cirrus but have a slightly wider base relative to length. Eggs large, ovoid, 40 to 46 by 14 to 17μ, each with a unipolar filament approximately three times the length of the egg (Fig. 17). The excretory system could not be traced.

Comparisons: H. chaetodoni is the second species in the genus. It is markedly different from *H. ovocaudatum* Srivastava, 1939 in sucker ratio, in distribution of vitellaria, in longer metraterm armed with spines, and in larger eggs.



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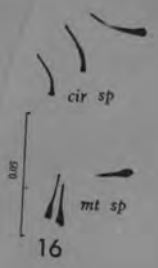

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Hurleytrematoides chaetodoni (Manter, 1942) Yamaguti, 1953 (FIGURE 37)

Synonym:

Hurleytrema chaetodoni Manter, 1942.

Host: *Chaetodon capistratus.*

Site: intestine.

Locality: Puerto Real, P. R.

Deposited specimen: No. 39329.

from Siddiqi + Cable, 1960

Hurleytrematoides chaetodoni (Manter, 1942) Mamaev, 1970

Хозяин, экстенсивность и интенсивность инвазии: *Chaetodon* sp., у одной рыбы из 5 исследованных, 5 экз. трематод.
Локализация: кишечник.

Hurleytrematoides chaetodoni (Manter, 1942) Yamaguti, 1953
(figs. 22-25)

Hosts.—*Chaetodon capistratus* Linn.; four-eyed butterfly fish; *Chaetodon ocellatus* Bloch; common butterfly fish; and *Chaetodon striatus* Linn., banded butterfly fish; new host record; family *Chaetodontidae.*

Incidence of infection.—In 2 of 5 *C. capistratus;* 1 of 2 *C. ocellatus;* and 1 of 1 *C. striatus.*

Location.—Intestine.

Locality.—Galeta Point, Republic of Panama [new locality record].

Discussion.—Manter (1942, 1947) described and reported *Hurleytrema chaetodoni* from *Chaetodon ocellatus* and *C. capistratus* in Tortugas, Florida. The metraterm of his type specimens was about 3/4 length of the cirrus sac. The metraterm in our material shows considerable extension or contraction (figs. 22, 23), sometimes agreeing in proportion with the type description. The egg sizes of *H. chaetodoni* from *Chaetodon striatus* and *C. ocellatus* (figs. 24, 25) overlap, though they are considerably shorter (about 30 to 32 *vs.* 40 to 46 microns) than those reported by Manter (1942). The unipolar filament-egg ratio of our specimens agrees with Manter's (1942) description. Although we have no material of *H. chaetodoni* from localities intermediate between Tortugas and Panama, these variations in egg size may represent population differences. Siddiqi and Cable (1960) reported *H. chaetodoni* from *Chaetodon capistratus* in Puerto Rico.

Yamaguti (1953) erected a new genus *Hurleytrematoides* for *H. chaetodoni.* The description of the type species of *Hurleytrema, H. ovocaudatum* Srivastava, 1938, seems to differ from that of *H. chaetodoni* mainly in the type of cirrus and metraterm spines, in egg size, and in a more posterior distribution of the vitelline follicles. Professor H. W. Manter (personal communication) adds another distinguishing character and recognizes *Hurleytrematoides* on the basis of a bipartite seminal vesicle. We are following his views here in recognizing *Hurleytrematoides.*

Segundario Segundario, 1961

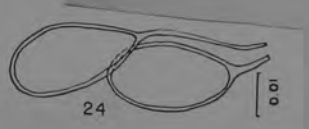
Hurleytrematoides chaetodoni (Manter, 1942) Yamaguti, 1954

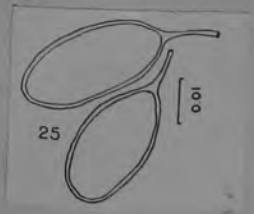
Synonym: Hurleytrema chaetodoni Manter, 1942.

Hosts: Chaetodon capistratus (C, J); *C. striatus* (J). CORRERO, JAMAICA

Site: intestine.

FROM NAHHAS AND CABLE (1964)





22. ventral view 23. dorsal view terminal genitalia 24. eggs, host, *Chaetodon striatus* 25 eggs, host *C. ocellatus* (filaments partially omitted in 24 and 25)

35. *Hurleytrematoides coronatus* Manter et Pritchard, 1961

(Fig. 35)

HABITAT: Intestine of *Chaetodon fremblii*; Hawaii.

DESCRIPTION (based on 11 whole mounts): Body elongate, spinulate, 1.0-1.5 mm long, widest (0.2-0.31 mm) at level of acetabulum. Oral sucker ventroterminal, 90-130 X 80-150 μ; short prepharynx present; pharynx globular, 40-90 X 60-100 μ; esophagus 50-200 μ long, bifurcating about middle of anterior third of body; ceca terminating near posterior extremity. Acetabulum 80-130 μ in diameter, at posterior end of middle third of body.

Testis round to longitudinally elongate, median, 0.1-0.28 X 0.05-0.11 mm, largely or entirely in posterior half of middle third of body. Cirrus pouch claviform, 0.2-0.35 X 0.03-0.05 mm, curving round acetabulum, with its posterior end close to anterior end of ovary; seminal vesicle bipartite; pars prostatica indistinct, although prostatic cells are developed inside the cirrus pouch. Cirrus cylindrical, lined with fine spines throughout its length. Genital pore anterosinistral to acetabulum.

Ovary subglobular, 40-93 X 41-70 μ, situated between base of cirrus pouch and testis. The germiduct arising from the anterior end of the ovary proceeds dorsad and turns backward at the point where it gives off the Laurer's canal; the latter winds its way dorsad and opens dorsally a little to the left of the median line at a level just in front of the ovary. Seminal receptacle ovoid, connected with the point of origin of Laurer's canal. Uterus forming two longitudinal loops reaching to posterior end of body or not; terminal organ constricted off from inflated metraterm, finely spinulate. Eggs 37-49 X 16-25 μ in life; polar filament 0.16-0.28 mm long. Vitellaria follicular, usually extending along ceca from acetabular zone to level of anterior part of testis, occasionally reaching to pre-acetabular zone. Vitelline reservoir immediately anterior to testis dorsal to ovary. Excretory vesicle elliptical, between level of cecal ends and posterior extremity; pore terminal.

DISCUSSION: In all of our specimens the genital pore is submedian instead of median in contrast with that in the specimens of Manter and Pritchard. The seminal receptacle and Laurer's canal have not been described by the original authors.

Yam., 1970

Hurleytrematoides **curacaensis** n.sp.
Nahhas & Cable 1964
Figures 38 and 39

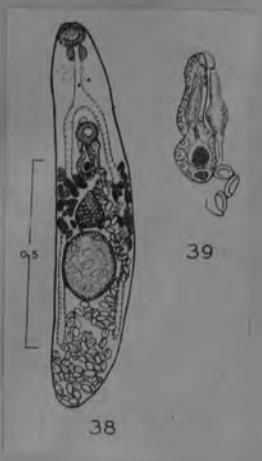
Hosts: Chaetodon capistratus (C); *Chaetodon ocellatus* (C).

Site: intestine.

Holotype: U.S.N.M. 60283.

Description based on 20 specimens. Body elongated, more rounded posteriorly, 0.880-1.26 long, 0.175-0.267 wide. Entire cuticle densely spinose; eye-spot pigment present. Oral sucker 0.053-0.075 in diameter; ventral sucker in anterior fourth or third of body, 0.045-0.060 in diameter; sucker ratio 1:0.8-0.9. Prepharynx very short; pharynx 0.030-0.039 long, 0.039-0.054 wide; esophagus 2-3 times length of pharynx; intestinal bifurcation well anterior to ventral sucker; ceca long, extending to midlevel of posttesticular space or slightly beyond. Gonads median, in about middle third of hindbody. Testis entire, 0.143-0.246 long, 0.113-0.173 wide. Posttesticular space 0.240-0.426 long. Cirrus sac well-developed, to right of midline, 0.158-0.195 long, 0.040-0.50 wide, containing a bipartite seminal vesicle, a short pars prostatica and a cirrus with needle-like spines, 8-11 μ long. Ovary entire, pretesticular, 0.067-0.100 in diameter; seminal receptacle not evident; uterus mainly posttesticular, coils mostly transverse; metraterm sac absent; metraterm well-developed, 0.083-0.105 long, 0.030-0.033 wide; entire length with spines 7-10 μ long, similar in shape to those of cirrus. Genital atrium without spines; genital pore median, immediately preacetabular. Eggs 27-33 by 16-23 μ, exclusive of single unipolar filament, 1-1.5 times length of egg. Vitellaria with 10-15 follicles on each side, well posterior to acetabulum, mostly pretesticular, a few sometimes extending to midlevel of testis. Excretory vesicle tubular; its pore terminal.

This species is very similar to *H. chaetodoni*. Both are from *Chaetodon capistratus* and one individual harbored both trematodes. *H. curacaensis* differs from *H. chaetodoni* mainly in having a smaller ventral sucker and wider eggs with much shorter filaments. The uterine coils tend to be more transverse than longitudinal and they lack the strand-like appearance characteristic of *H. chaetodoni*. The eggs of *H. chaetodoni* are highly variable in length. Exclusive of the filament, they measure 37-42 by 15-17 μ in our specimens. A single specimen reported from Puerto Rico by Siddiqi and Cable (1960) has eggs measuring 52-54 by 15-16 (unpublished data). Sogandares-Bernal and Sogandares (1961) gave a length of 30-32 and suggested that it may vary with populations. In *H. coronatum* Manter and Pritchard, 1961, the filament is 10-15 times the length of the egg. *H. malaboensis* Velasquez, 1961, has a longer egg filament (7-8 times length of egg), apparently a non-spiny cirrus and longer ceca.



from Kamegai, 1970 (Res. Bull. Megur[illegible] Para. Mus. No. 4)

Postmonorcheidinae YAMAGUTI, 1958

Hurleytrematoides japonicus n. sp.

(Figs. 6~8)

Host: *Chaetodontoplus septentrionalis* (TEMMINCK & SCHLEGEL).

Location: Intestine.

Locality: Tsushima Island, Sea of [illegible] pan.

Date: Aug. 2, 1969.

Specimens: M. P. M. Coll. No. 16549

Frequency: Three in one, and two another host examined.

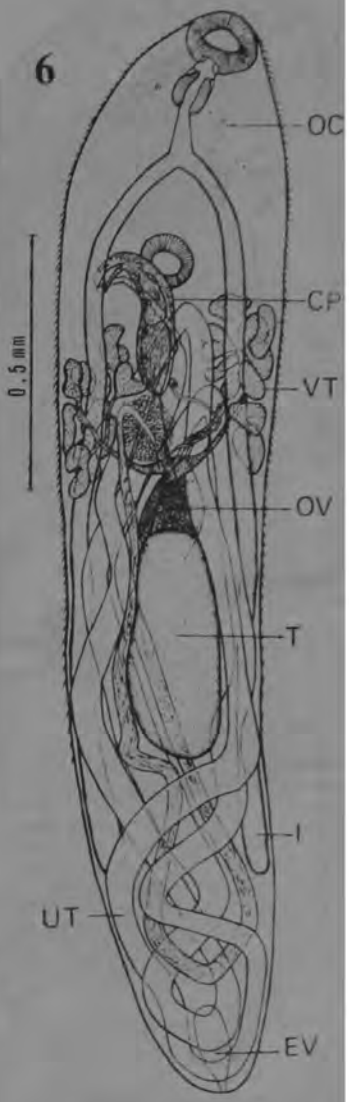
Description: Based on five gravid specimens. Body elongated, rounded at both ends, 1.3—3.1 mm long by 0.43—0.53 mm wide at level of intestinal bifurcation. Cuticule spinose, spines extending to level of testis. Eye-spot pigment present near pharynx. Oral sucker terminal, 0.11—0.19×0.13—0.15 mm; prepharynx short, 27—30 μ in length; pharynx globular, 85—120×82—125 μ; esophagus a little longer than pharynx, bifurcating about middle of anterior third of body; ceca terminating some distance from the posterior extremity of body. Acetabulum smaller than oral sucker, 0.09—0.16×0.11—0.175 mm, situated at the middle of the first one half of the body. Sucker ratio 1: 0.71—0.92.

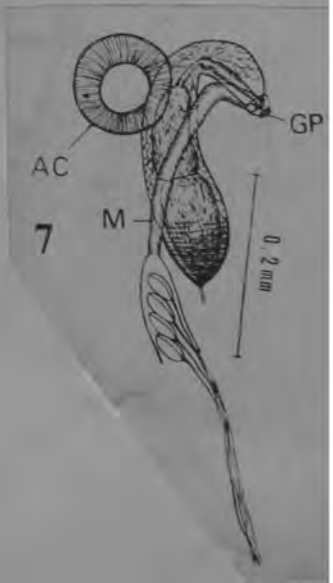
Testis elliptical, median, postequatorial, 0.38—0.68×0.18—0.28 mm. Two vas efferens run dorsally from anterior margin of the testis to form vas deferens midway to the cirrus pouch. Cirrus pouch retort-shaped, 0.25—0.38 mm long linearlly by 0.06—0.13 mm wide at its lower third, extending to the junction of the first and middle third of body, containing bipartite vesicula seminalis, short round pars prostatica, prostate cells, and cirrus with needle-like spines, 10 μ long. The duct between distal part of vesicular seminalis and pars prostatica is covered with longitudinal muscle fibers; the inside of the proximal part of this duct is armed with few minute spines pointing backwards. Genital pore submedian, opening ventrally on the left caecum at a level posterior to the margin of acetabulum.

Ovary elongated oval, 0.15—0.24×0.13—0.22 mm, immediately pretesticular, overlapping anterior end of testis ventrally posteriorly. Germiduct arising from anterior end of ovary, running forward and turning backward at the point where it joins the elongated narrow seminal receptacle, giving off Laurer's canal at level of the anterior end of the ovary where it receives a narrow vitelline duct to form ootype anterodorsosinistral to the ovary. Laurer's canal long, winds sinuous course and opens dorsally in median line beside the base of cirrus pouch. Vitellaria consisting of several irregurally lobed follicles, extending symmetrically in median fields from postacetabular level to mid-level of ovary. Uterus forming three longitudinal loops, reaching to posterior extremity of body; proximal descending limb containing sperm cells. No terminal organ. Metraterm well developed, 0.225 mm long by 25—35 μ wide with fine spines inside similar to those of cirrus, throughout its length. It crosses the cirrus pouch ventro-obliquely to open dorsal to cirrus pouch into shallow unarmed genital atrium. Eggs oval to elliptical, filamented at antiopercular end, uncollapsed eggs 30—43×15—23 μ in balsam. Filaments very long, 11 [illegible] times the length of the egg. Excretory vesicle tubular, short, 0.17×0.06 mm, pore terminal.

Discussion: This species differs distinctly from the most closely related species *H. cornatum* MANTER et PRITCHARD, 1961 in large body size, the shape of cirrus pouch, metraterm without vesicle, having submedian postacetabular genital pore, and short excretory vesicle.

The differences among the five species of *Hurleytrematoides* are shown in Table 1.





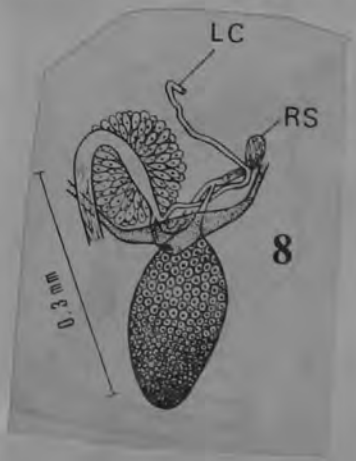


Table 1. Differences among the five species of *Hurleytrematoides*.

Species:	*H. japonicus* n. sp.	*H. chaetodoni* (MANTER, 1942) YAMAGUTI, 1953	*H. cornatum* MANTER et PRITCHARD, 1961	*H. malaboensis* VELASQUEZ, 1961	*H. curacaoensis* NAHHAS et CABLE, 1964
Host:	*Chaetodontoplus septentrionalis*	*Chaetodon ocellatus* (type host)	*Chaetodon lineolatus* (type host)	*Parachaetodon ocellatus*	*Chaetodon capistratus*
Locality:	Sea of Japan	Florida	Hawaii	Philippine	Curaçao
Body size (mm):	1.3—3.1×0.43—0.53	0.807—1.477×0.164	0.804—1.956×0.168—0.422	0.58—1.01×0.160—0.250	0.88—1.26×0.175—0.276
Sucker ratio:	1 : 0.71—0.92	1 : 1	1 : 0.62—0.87	1 : 1—1.2	1 : 0.8—0.9
Location of genital pore:	postacetabular, submedian	preacetabular, median	preacetabular, median	level of acetabulum, median	preacetabular, median
Shape of cirrus pouch:	retort-shaped	slender, elongate	pyriform	slender, elongate	slender elongate
Metraterm:	without vesicle	without vesicle	with unarmed spherical vesicle	without vesicle	without vesicle
Eggs (μ):	30—43×15—23	40—46×14—17*, **	32—45×16—26	35—46×16—21	27—33×16—23
Polar filament:	11—15 times	3 times	10—15 times	7—8 times	1—1.5 times
Excretory vesicle:	tubular, short	?	tubular, reaching to level of testis	saccular	tubular

* 52—54×15—16 μ..... reported from *Chaetodon capistratus* at Puerto Rico by SIDDIQI & CABLE (1960) in NAHHAS et CABLE (1964).

** 30—32 μ long..... reported from *Chaetodon striatus* at Republic of Panama by SOGANDARES BERNAL et SOGANDARES (1961) who suggesting the variation of egg size by populaton.

HURLEYTREMATOIDES

HYSTERORCHIS Durio & Manter, 1968

DIAGNOSIS OF **Hysterorchis:** Monorchiidae. Testes two, near posterior end of body. Oral sucker round. Cirrus sac with bipartite, saccular seminal vesicle and spined cirrus. Ovary deeply three- or four-lobed. Vitellaria extensive in middle third of body. Eggs filamented. Uterus entering base of metraterm; metraterm muscular but unspined; atrium unspined. Type species: **Hysterorchis vitellosus.**

DISCUSSION: This genus is unusual in its bipartite seminal vesicle, extensive vitellaria, and unspined metraterm. The nearest related genus is *Diplohurleytrema* Nahhas and Cable, 1964, from *Echidna catenata* (Bloch), a moray eel, from the Caribbean. *Diplohurleytrema* has fairly extensive vitellaria, a bipartite seminal vesicle, two testes, and filamented eggs. However, it differs in its unlobed ovary, presence of a seminal receptacle, spined metraterm, median genital pore, and more anterior testes. *Diplolasiotocus* Yamaguti, 1952, from *Chaetodon* Linn. in the Celebes is somewhat similar in its long esophagus, bipartite seminal vesicle, two testes, and filamented eggs; but its vitellaria are reduced to a few tubular glands, the ovary is unlobed, the metraterm spined, the genital pore median. The double spination of the cirrus in **Hysterorchis** suggests the condition found by Bartoli and Prevot (1966) in *Lasiotocus mulli* (Stossich, 1883) Looss, 1907, in Odhner, 1911.

Hysterorchis has a number of characters which might be considered as primitive (or less specialized) in the family Monorchiidae; for example, the numerous vitelline follicles, simple oral sucker, and unspined metraterm.

~~Diesophalidae~~

Monorchiidae

Durio & Manter, 1968

Hysterorchis vitellosus n. gen., n. sp.
(Figs. 11–14)

HOSTS AND LOCALITIES: *Plectorhynchus* sp.; Lutjanidae; Noumea, New Caledonia. *Plectorhynchus pictus* (Thunberg); Heron Island, Queensland, Australia; parasite collected by Dr. John C. Pearson, University of Queensland.

LOCATION: Intestine.

NUMBER: Four from New Caledonia; one from Australia.

HOLOTYPE: USNM Helm. Coll. No. 63307.

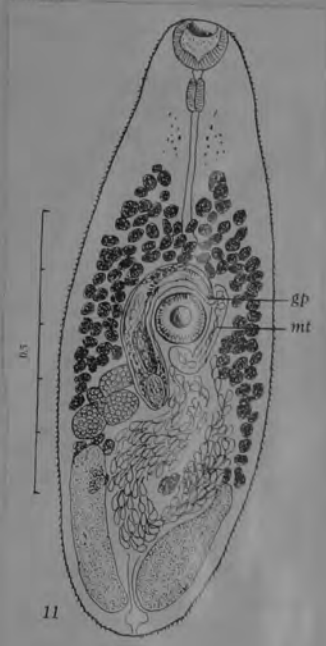
DESCRIPTION (based on four specimens; one sectioned): Body entirely and strongly spined; 0.988–1.064 long; 0.362–0.442 greatest width; tapered and broadly rounded at each end. Remains of pigment spots in forebody. Oral sucker rounded; 0.080–0.093 in diameter; acetabulum near midbody, 0.080–0.093; sucker ratio 1 : 0.86–1.16. Forebody 0.435–0.523 long. Prepharynx short; pharynx 0.061–0.080 long by 0.032–0.038 wide; esophagus very long, thick-walled, muscular, 0.130–0.192 long; bifurcation about one-third body length from anterior end; ceca inconspicuous, hidden by vitellaria, ending slightly posterior to acetabulum.

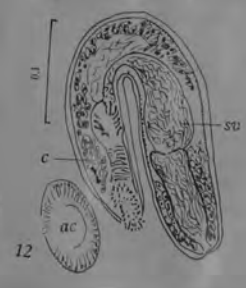
Testes two, elongate, symmetrical or slightly diagonal, in posterior third of body, extending to posterior end of body. Cirrus sac (Fig. 12) large, curved, arcuate to U-shaped, base slightly posterior to midbody; with thick wall of longitudinal (outer) and circular (inner) muscles; length 0.272–0.448; width 0.054–0.070; partly dorsal to acetabulum, or curving around either side of acetabulum; extending anterior to genital pore, then recurving to genital pore. Genital pore slightly posterosinistral to anterior edge of acetabulum. Cirrus sac containing bipartite seminal vesicle, anterior chamber narrowing to tube, then entering a small sac armed with long spines with swollen bases (Fig. 13), followed by tube with circular muscles and cirrus armed with short spines. Prostatic cells around seminal vesicle and cirrus except for region of thin-walled, transparent cells adjacent to tube between seminal vesicle and cirrus.

Ovary deeply three-lobed or (in holotype) four-lobed; to right of cirrus sac; sometimes overlapping acetabulum dorsally; seminal receptacle lacking; sperm in uterus. Vitelline follicles large, numerous, from midesophagus level to testes level, surrounding ceca, confluent anterior to acetabulum, slightly overlapping uterus and testes dorsally. Uterus with a single large coil extending posteriorly between, or ventral to, testes to near posterior end of body. Metraterm thick-walled, about 0.240–0.256 long by 0.048 wide, extending along left side of acetabulum, posterior part usually bent toward midline and sometimes crossing cirrus sac; unspined; uterus entering posterior end of metraterm (i.e., terminal organ not differentiated). Eggs (Fig. 14) yellow, 26–32 by 16–19 μ, with long filament at one end.

Excretory vesicle extending between testes or flattened posterior to them, not distinctly Y-shaped but spreading at anterior end.

The name *hysterorchis* refers to the far posterior location of the testes. The name *vitellosus* refers to the vitellaria which are much better developed than in other monorchids.





HYSTERORCHIS